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RUBELLA ARTHRITIS—A Study of Twenty Cases , Philip R. Lee, M.D., Anna F. Barnett, M.D., John F. Scholer, M.D., Sergius Bryner, M.D., and William H. Clark, M.D., Palo Alto	125
HYPOPARATHYROIDISM—Medical and Surgical Aspects , Alex Gerber, M.D., Alhambra	129
FAT AND CARBOHYDRATE METABOLISM IN HUMANS—A Study of Nutritional and Hormonal Effects , Josiah Brown, M.D., Los Angeles	132
RUPTURED ANEURYSM OF THE ABDOMINAL AORTA , Roy Cohn, M.D., Stanford University	137
THE GUILLAIN-BARRÉ DISEASE COMPLEX—An Analysis of the Disease with Therapeutic Suggestions and Report of 26 Cases , H. Richard McFarland, M.D., Oakland	141
A SIMPLE WAY TO DRAIN A SUBUNGUAL HEMATOMA , Troy G. Rollins, M.D., Woodland	147
RABIES—Suggested Indications for Treatment of Persons After Exposure to Infection	148
POSTPARTUM PHLEBECTOMY , Edward N. Snyder, Jr., M.D., and Martin H. Crumrine, M.D., Pasadena	155
THE CORONER AND THE COMMON LAW—Part V—Coroner or Medical Examiner? Jesse L. Carr, M.D., San Francisco	157
A NEW CIRCUMCISION INSTRUMENT , Robert Cohen, M.D., Bakersfield	159

CASE REPORTS:

Cardiac Arrest Occurring Outside the Operating Room—Report of Two Cases , Donald C. Schlotter, M.D., and Richard W. Gentry, M.D., Riverside . .	160
A Case of Leptospirosis Ballum in California , Ruth A. Boak, M.D., William D. Linscott, Ph.D., and Ralph E. Bodfish, M.D., Los Angeles	163

CALIFORNIA MEDICAL ASSOCIATION:

Council Meeting Minutes, 461st Meeting, July 9, 1960	168
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INFORMATION:

Poliomyelitis	176
--------------------------------	-----

EDITORIAL, 166	•	WOMAN'S AUXILIARY, 175	•	NEWS AND NOTES, 178
		BOOK REVIEWS, 183		

90th Annual Meeting, Los Angeles, April 30 to May 3, 1961
(See page 173)

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Rubella Arthritis

A Study of Twenty Cases

PHILIP R. LEE, M.D., ANNA F. BARNETT, M.D., JOHN F. SCHOLER, M.D.,
SERGIUS BRYNER, M.D., and WILLIAM H. CLARK, M.D., Palo Alto

ALTHOUGH ARTHRITIS is one of the most common complications of rubella it has attracted little attention in the American medical literature.^{4,8} Our interest in this disease was stimulated by the recent report of Johnson and Hall⁸ and by the observation of 20 patients with rubella arthritis at the Palo Alto Medical Clinic during the last ten years.

The clinical manifestations of rubella arthritis are variable in character, severity and duration, but certain features are commonly observed.^{1,2,4,6-17} Rubella arthritis has rarely been observed in children before puberty and it affects women far more frequently than men. The symptoms in the joints usually appear with or after the onset of the rash, they may persist for two to fourteen days and they do not produce permanent joint deformity. The joints most frequently affected are: Small joints of the hands, the wrists, knees, ankles and toes. Rarely are the hips and shoulders involved. Pain is a prominent feature and may be associated with fibrositis and joint tenderness with only slight joint swelling. Migratory polyarthritis has been observed, but more commonly the symptoms persist in the joints initially involved. The symptoms that may be noted in addition to arthritis include weakness, paresthesias, lumbago, sciatic nerve pain and fibrositis.

Presented before the Section on Internal Medicine at the 89th Annual Session of the California Medical Association, Los Angeles, February 21 to 24, 1960.

From the Department of Internal Medicine, Palo Alto Medical Clinic, Palo Alto.

• Twenty patients, five males and fifteen females, who had rubella arthritis were observed for periods ranging from one to ten years after recovery.

Rubella arthritis in these patients was characterized by polyarthritis associated with fibrositis, myalgia, paresthesias and muscular weakness. All of the male patients but only one-third of the females had involvement of the knee joints. The small joints of the hands were the joints most commonly affected in women. Post-rubella arthritis rheumatic symptoms, especially fibrositis, persisted for many months in almost half of the females, not at all in the males.

The leukocyte content of the blood tended to be low and the erythrocyte sedimentation rate accelerated in the few patients in which determinations were done.

Latex tests were performed in 17 patients. Ten of the 17 were studied with the three-stage technique of Hall. Results of inhibition tests were positive in 80 per cent of the patients with rubella arthritis studied who were tested within 18 months after the onset of illness. None of the patients tested 18 months or more after rubella arthritis had positive reaction.

Fever is not usually associated with rubella arthritis but a secondary rise in temperature may occur coincident with the onset of arthritis.

The treatment of patients with rubella arthritis has generally been restricted to rest, local heat and salicylates. Usually the symptoms subside promptly

and it is difficult to evaluate the results of therapy in most patients.

The only complications that appear to be directly related to rubella arthritis are monarticular arthritis, myalgia, fibrositis and arthralgia.^{9,13} These symptoms may persist or recur intermittently after rubella arthritis.

Results of routine laboratory tests in patients with rubella arthritis have seldom been noted in the published reports. In uncomplicated rubella, leukopenia occurs early and the cell count then promptly returns to normal. The erythrocyte sedimentation rate stays within a normal range in uncomplicated rubella.¹⁷

Latex tests were performed on ten patients with rubella arthritis and seven patients with uncomplicated rubella by Johnson and Hall.⁸ Two of those with uncomplicated rubella and nine with rubella arthritis had positive results when euglobulin-inhibition reactions were studied.

RESULTS

Many of the classical features of the disease were noted in the 20 patients with rubella arthritis that we observed (Table 1). In all the male patients the knee joints were affected, while this occurred in only one-third of the female patients. The joints most commonly affected in the females were the small joints of the hands and the wrists. The clinical diagnosis of rubella arthritis was made only in patients who had objective joint swelling in addition to the complaints of joint pain and stiffness. Patients who had only arthralgia with rubella were not included in the study.

Common symptoms associated with rubella arthritis in this group of patients were fibrositis, myalgia, paresthesias and weakness (Table 2). Only one patient was specifically noted to have a secondary rise in temperature.⁸

Seven of the female, but none of the male, patients had residual rheumatic symptoms after recovery. Two of these patients had preexisting arthritis, but the others had no evidence of arthritis. The commonest residual symptom was fibrositis (four patients), while one woman had persistent arthralgia, one had monarticular arthritis in a previously asymptomatic osteoarthritic finger joint and a third had a flare-up of previously quiescent (five years) rheumatoid spondylitis (Table 2).

Although rheumatic fever is known to occur in association with streptococcal infection complicating rubella¹ we found no clinical or laboratory evidence of streptococcal infection in our patients. Follow-up observations were made on all the patients for a minimum of one year and no clinical evidence of the usual sequelae of rheumatic fever was noted.

TABLE 1.—Clinical Features in 20 Patients with Rubella Arthritis

1. Sex: Female—15	Male—5	
2. Age: 14 to 47 years		
3. Joints affected:		No. of Cases
Small joints of the hands.....	17	
Knees	10	
Wrists	7	
Feet	5	
Ankles	4	
Elbows	3	
Shoulders	2	
4. Onset of arthritis after rash: 0 to 3 days.		
5. Duration of joint symptoms: 2 to 14 days		

TABLE 2.—Associated Symptoms and Complications in 20 Patients with Rubella Arthritis

1. Associated symptoms:	No. of Cases
Fibrositis	8
Myalgia	3
Paresthesias	3
Muscular weakness	1
Fever	1
2. Complications:	
Persistent fibrositis	4
Persistent arthralgia	1
Flare-up osteoarthritic joint	1
Flare-up rheumatoid spondylitis	1

Therapy in 17 patients was limited to rest, local heat and salicylates. Result varied from no effect to moderate relief of joint symptoms. One patient received prednisolone for ten days and the patient with the persistent monarticular arthritis received a local injection of hydrocortisone. The systemic steroids and phenylbutazone produced excellent symptomatic relief while the local injection was of only transient benefit.

Routine laboratory tests were performed infrequently during the acute illness. In four patients the number of leukocytes per cu. mm., determined at the time of joint symptoms, were 6,350, 5,400, 4,700 and 4,000. The erythrocyte sedimentation rates (Wintrobe) in three patients with uncomplicated rubella arthritis were 40, 26 and 23 mm. in one hour. These accelerated rates all returned to normal limits after recovery. In the patient with rheumatoid spondylitis the erythrocyte sedimentation rate was 51 mm. in one hour at the time of the rubella arthritis, and six months later it was 23 mm. in one hour. In addition to routine laboratory tests we occasionally obtained throat cultures, antistreptolysin titers, preparations for lupus erythematosus cells, and serum protein electrophoresis. These were normal or negative in all patients tested.

Latex tests were performed in 17 patients.* Ten of the 17 were studied with the three-stage technique of Hall,⁵ in which the patient's serum, the euglobulin fraction and the euglobulin-inhibition test are

*Latex tests were performed in our own laboratory and through the courtesy of Dr. Arthur Hall, Robert Breck Brigham Hospital, Boston.

TABLE 3.—Results of Latex Tests in Rubella Arthritis

Patient	Age	Sex	Date of Rubella	Date of Test	Serum	Euglobulin	Inhibition
1	35	F	Dec. 27, 1958	Oct. 30, 1959	0	0	+
2	46	F	June 1, 1958	Oct. 30, 1959	0	0	+
3	42	F	May 15, 1958	Oct. 30, 1959	0	0	+
4	28	F	May 7, 1958	Oct. 30, 1959	0	0	+
5*	42	F	June 23, 1958	Oct. 30, 1959	0	0	0
6	46	F	April 21, 1958	Oct. 30, 1959	0	0	0
7	18	M	April 8, 1958	Oct. 30, 1959	0	0	0
8	38	M	March 1, 1958	Oct. 30, 1959	0	0	0
9	47	F	June 10, 1957	Oct. 30, 1959	0	0	0
10	24	F	Feb. 20, 1955	Oct. 30, 1959	0	0	0
11	41	M	March 15, 1949	Oct. 30, 1959	0	0	0

* Rheumatoid spondylitis.

used. Blood specimens obtained from these patients from ten months to ten years after they recovered from rubella arthritis were studied in Hall's laboratory (Table 3). Results of tests using the patient's serum and euglobulin fraction were negative in all patients studied in Hall's laboratory. Result of euglobulin-inhibition tests were positive in four of the ten patients studied. These patients were all females and all had had rubella arthritis less than 18 months before the testing. In all the patients, including the three males, who were tested 18 months or more after the occurrence of rubella arthritis, the results of euglobulin-inhibition tests were negative. One patient with rheumatoid spondylitis and rubella arthritis had a negative euglobulin-inhibition test when studied 16 months after she had had rubella arthritis. All of the 17 patients studied in our own laboratory had negative results of latex tests using the patient's serum. Sensitized sheep cell agglutination tests (using F-11 coated tanned sheep cells) for rheumatoid factor were performed on the sera of ten patients† from three weeks to four years after the occurrence of rubella arthritis and only one of the patients (Case 3, Table 3) had a positive result: Three weeks after rubella arthritis, F-11 agglutination titer was 1:896, three months later it was 1:224 and seventeen and a half months later it was negative. This patient was one of the four in whom the result of the euglobulin-inhibition test was positive.

DISCUSSION

Based on our own observations, and those previously reported, rubella arthritis can be characterized as a self-limited polyarthritis affecting young adults, particularly females, and usually persisting for from two to fourteen days. We have found leukopenia and an elevated erythrocyte sedimentation rate in the few patients studied. The clinical picture in males

and females appears to differ in that all the male patients we have observed have had involvement of the knee joint while this is uncommon in females. The latter usually have involvement of the small joints of the hands, an infrequent occurrence in males.

Recurrent or persistent rheumatic complaints, particularly fibrositis, myalgia and arthralgia, occurred in almost one-half of our female patients and in none of the male patients. These symptoms have been noted by others,^{9,13} but this striking sex difference was not previously commented upon.

Recently, Johnson and Hall⁸ reported the results of a study of ten patients with rubella arthritis and seven with uncomplicated rubella by means of latex tests. In patients with rubella arthritis they found no positive results using serum alone, but positive results in two cases by using the euglobulin fraction of the patient's serum and positive results in nine cases by use of the euglobulin-inhibition technique described by Hall.⁵ In the patients with uncomplicated rubella results of tests using serum alone were negative, as were those in which the euglobulin fraction was used, but two of the seven had positive results by euglobulin-inhibition tests. These patients were studied after intervals of from three days to seven months after the onset of rubella. In our patients, tests using Hall's technique^{5*} were performed after intervals of eleven months to ten years after the onset of rubella. In our group of patients 80 per cent of the females studied within 18 months of rubella arthritis had positive euglobulin-inhibition test results while none of the patients studied longer than 18 months after rubella had a positive result. These results suggest that a high percentage of patients with rubella arthritis will have positive euglobulin-inhibition tests initially and that these will tend to become negative with the passage of time. Johnson and Hall⁸ suggested that this phen-

†The F-11 agglutination test, using sensitized sheep red blood cells coated with F-11 globulin, is one of the tests for the so-called rheumatoid factor. The tests were performed in the Laboratory of Dr. Wallace Epstein, University of California Medical Center, San Francisco.

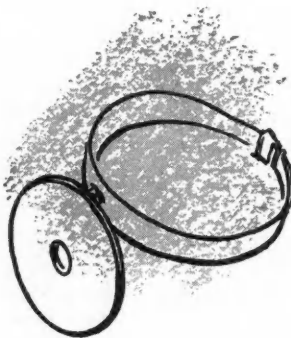
*Tests performed through the courtesy of Arthur P. Hall, M.D., Robert B. Brigham Hospital, Boston.

omenon might represent a nonspecific alteration of serum protein to infection rather than the presence of actual rheumatoid factor in the serum of patients with rubella arthritis. Virus infections seem particularly likely to produce such alterations in serum proteins, Dresner and Trombly³ finding that 29 of 35 patients with a variety of viral infections (none had rubella) had positive reaction to euglobulin-inhibition tests.³ Johnson and Hall,⁸ however, as previously noted, reported the results of inhibition tests positive in only two of seven patients with uncomplicated rubella but in nine of ten patients who had rubella arthritis. However, since the rubella patients with uncomplicated disease were all studied approximately four months after the onset, whereas the patients with rubella arthritis were studied at various intervals—as early as three days to as long as six months after the onset of illness—differences in lapse of time after the acute phase may have been a factor in the differences in results. It may be noted in this regard that Dresner and Trombly³ found that the agglutinating factor or factors disappear when the pathogenetic mechanisms cease to operate, as by remission or cure of the causative disease. Whether or not the presence of arthritis can be related to the presence of agglutinating activity by the euglobulin-inhibition technique will await further study of patients with uncomplicated rubella as well as those with rubella arthritis.

Palo Alto Medical Clinic, 300 Homer Avenue, Palo Alto (Lee).

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Hypoparathyroidism

Medical and Surgical Aspects

ALEX GERBER, M.D., Alhambra

HYPOPARATHYROIDISM is essentially a complication of surgical operation on the thyroid gland. Buchwalter⁵ reported a 3 per cent incidence of permanent parathyroid deficiency in a series of 600 thyroid operations at a university hospital. The incidence of this complication in any series probably depends largely upon the proportion of operations performed for carcinoma of the thyroid. Less important causes of parathyroid tetany are congenital absence of the parathyroid glands, idiopathic hypoparathyroidism and a transient stage following the removal of a parathyroid adenoma.

The subtotal removal of parathyroid tissue during the course of thyroidectomy may lead to symptoms of hypoparathyroidism of a few days' to a few weeks' duration which readily respond to antitetany therapy. It is the plight of patients after inadvertent extirpation of all the parathyroid glands that is the concern of this paper. They may be reduced to pathetic states if available therapy is ineffective.

The crucial factor is the elimination of the parathyroid hormone, with the resultant changes in calcium and phosphorus metabolism. The production of ionized calcium, which plays an important role in regulating neuromuscular irritability, is dependent upon the integrity of the parathyroid glands and adequate absorption of calcium from the gastrointestinal tract. The parathyroid hormone maintains constant serum calcium and phosphorus levels by governing the renal threshold for phosphates. Hypoparathyroid tetany, due to an elevation of serum phosphate and a lowering of serum calcium, leads to body alterations involving the nervous system and epithelial structures.

The milder forms of postoperative tetany due to partial removal of the parathyroid glands, results in insidious complaints secondary to increased neuromuscular irritability. The tetany following complete removal of the parathyroids, however, is characteristically explosive in onset: Shortly after operation on the thyroid gland—usually within 24 hours—the patient becomes apprehensive and complains of tingling of the fingers and toes. Carpopedal

• Hypoparathyroidism is almost invariably a complication of operation on the thyroid gland, and the diagnosis usually presents no problem. Fairly good control of the symptoms is possible by medical management, but, since substitution therapy is not available, the treatment of hypoparathyroidism is not completely satisfactory. Parathyroid homografting has been attempted; at present, however, grafting procedures must be considered experimental.

spasm quickly follows, and if treatment is not begun, the patient may die of generalized convulsions and laryngospasm.

After the patient is nursed through the acute state, chronic tetany remains. Primarily neuromuscular in origin, the symptoms include weakness, lethargy and somnolence. Moreover, during periods of stress all the symptoms of acute tetany may reappear. Sometimes, psychosis develops; rarely roentgenological examination reveals calcification of the basal ganglia of the brain.⁴ In cases of long standing, changes in the epithelial structures occur. Transverse ridging of the finger and toenails and a susceptibility to fungus infections of the skin and mucous membranes are of periodic annoyance. A more serious complication is the formation of presenile cataracts.^{4,5}

Interestingly, partial relief of the symptoms of hypoparathyroidism may occur with the onset of pregnancy,³ the fetal parathyroid glands apparently being capable of sustaining the mother to some degree.

The diagnosis of parathyroid tetany presents no problem unless the characteristic onset is delayed. Theoretically this occurs when most of the parathyroid tissue is surgically removed and the blood supply to the remainder is damaged. Thrombosis of the vessels and necrosis of the residual parathyroid tissue may result in late symptoms of hypocalcemic tetany. More often, suspicion is aroused by the typical sequence of events following operation on the thyroid gland. Latent tetany can be demonstrated by a twitching of the facial muscles when the facial nerve anterior to the ear is tapped (Chvostek's sign), or by eliciting carpal spasm on applying a tourniquet to the forearm (Trousseau's sign).

Read in part at a Symposium on Parathyroid Disorders—Diagnosis and Management; presented before the First General Meeting at the 89th Annual Session of the California Medical Association, Los Angeles, February 21 to 24, 1960.

Increased excitability of these muscles may also be demonstrated by galvanic stimulation (Erb's sign).

Laboratory tests then can be used to confirm the diagnosis. Hypoparathyroid tetany is associated with a decrease in serum calcium (normal 9 to 11 mg. per 100 cc.) and an increase in serum phosphorus (normal 2.5 to 4 mg. per 100 cc.). Urinary excretion of calcium, as demonstrated by the Sulzowitch test, decreases. More sophisticated studies of parathyroid malfunction are usually unnecessary.

TREATMENT

The treatment of hypoparathyroidism may be lifesaving if acute symptoms of tetany develop immediately following thyroid operations. The replacement of serum calcium is paramount. This is most rapidly done by injecting 10 cc. of 10 per cent calcium gluconate intravenously. The patient can then be maintained by slow intravenous drip of 10 cc. of 10 per cent calcium chloride diluted in 500 cc. of normal saline solution. Calcium chloride is too irritating to be used undiluted and will result in a serious slough if injected subcutaneously. Parathormone is used infrequently in acute tetany. Sometimes emergency tracheostomy is necessary to relieve laryngospasm unresponsive to intravenous calcium therapy.

If all the parathyroid glands have been excised, intravenous infusion of calcium cannot be discontinued until the treatment for chronic tetany is instituted. The chronic form of hypoparathyroid tetany requires treatment for an indefinite period. Prolonged therapy falls into five categories: (1) Use of drugs that increase the absorption of calcium from the gastrointestinal tract; (2) use of drugs that act on the kidney tubules, decreasing phosphate reabsorption and thus increasing the excretion of this cation in the urine; (3) adding absorbable calcium salts to the diet; (4) avoidance of calcium-binding foods, and (5) ingestion of phosphate-binding foods.

1. Vitamin D (Calciferol®), 50,000 to 200,000 units per day, is the drug of choice for increasing calcium absorption from the gastrointestinal tract. Dihydrotachysterol (AT 10, Hytakerol®) is equally effective but more expensive—one capsule (0.625 mg.) per day is the usual dose.

2. AT 10 also serves to maintain a normal serum calcium level by decreasing phosphate reabsorption by the renal tubules. Similar action on the kidney by parathormone is of less importance, since the rapid development of tolerance renders this drug valueless in clinical practice.

3. Supplemental calcium is often administered orally in the form of calcium lactate or calcium gluconate (5 to 10 gm. per day). Although contain-

ing a higher concentration of calcium, calcium chloride cannot be used in most cases because of intolerance by the gastrointestinal tract.

4. Calcium-binding foods are avoided within dietary reason. Phosphates (dairy products), and oxalates (spinach, rhubarb, chocolate) are the chief offenders.

5. Phosphate-binding drugs (Amphojel®, Gelusil®) can be used to advantage to decrease absorption from the gastrointestinal tract and thereby lower the serum phosphate level.

The surgical treatment of hypoparathyroidism starts at the operating table during operation on the thyroid gland. If parathyroid tissue can be identified in the removed specimen, the glands are immediately transplanted into the neck muscles. (Experimentally, a definite percentage of these autografts survive.^{12,18}) Clinically, the value of this procedure is open to conjecture since the surgeon never is certain whether it is the graft or perhaps residual parathyroid tissue that is maintaining the patient's calcium balance. Moreover, the inadvertent removal of one or more parathyroid glands is usually not discovered until several days later when the pathologist is making a microscopic study of the specimen.

Ideally, homotransplantation of parathyroid glands is the answer to the problem of hypoparathyroid tetany. Until recently, attempts at homografting were uniformly unsuccessful^{10,13} owing to immune response by the host (reportedly successful results were poorly documented). There is, of course, no genetic incompatibility when the donor and recipient are identical twins.

Among the methods attempted to delay or circumvent the immune reaction are the use of embryonic tissue for donor material,^{14,19,22} ensheathing the graft in a millipore filter,¹ tissue culture techniques of delayed transplantation⁸ and radiation of the host to weaken the immune response by destroying the capacity for antibody formation.⁹ Perhaps the most promising method of parathyroid transplantation takes into account the theoretical decreased antigenicity of fetal tissue and the increased chances of success of vascularized grafts.¹² Sterling^{20,21} reported three successful transplants with this method, using as donors full term infants that died soon after birth. Unfortunately, no other surgeon has been able to duplicate these results although apparently some of them have improved upon the operative technique.^{2,6,7,11,17} In another recent case, in which a successful result was reported with the use of a vascularized fetal graft,²³ the transplant is now known to be a failure.¹⁶

I have transplanted a vascularized parathyroid graft, from a two-pound fetus that did not survive premature birth at six months, to a 12-year-old

child. The operation was done under ideal circumstances, and the anastomosis of vessels to the host was completed within two and a half hours of the death of the premature infant. Despite an immediate "take" of the graft, as demonstrated by reexploration of the wound one week later, and early dramatic clinical improvement of the patient, the long-term result has been disappointing.

As Murray¹⁵ pointed out, convincing proof of a successful parathyroid homograft has not been established, and it becomes increasingly apparent that a favorable outcome in this field awaits the solution to the general problem of the antigenic rejection of homografts. At present, homotransplantation of parathyroid tissue must be considered experimental.

1237 East Main Street, Alhambra.

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Fat and Carbohydrate Metabolism in Humans

A Study of Nutritional and Hormonal Effects

JOSIAH BROWN, M.D., Los Angeles

ADVANCES IN KNOWLEDGE and techniques have made it possible to study in some detail the influences of nutritional and hormonal factors on metabolism in humans. New knowledge of the importance and role of fatty acids has provided a tool to study the rate of fat mobilization and utilization. New advances in instrument design have provided sensitive and reliable equipment to detect radioactive carbon dioxide coming from the lungs of normal subjects after injection of safe amounts of radioactive fatty acids. New knowledge of species specificity of growth hormone and new methods of purification have provided purified potent preparations of human growth hormone for experimental use.

In order to understand the basis and significance of the research to be presented, a background of knowledge of modern concepts of fatty acid metabolism is necessary. Long-chain fatty acids of 16 to 20 carbon length are held in fat depots as triglycerides and mobilized into the circulation when needed for energy (Chart 1). These "natural" fatty acids are chiefly oleic, linoleic and palmitic² and are carried in the circulation bound to serum albumin. In this form they do not cause lipemia and it is of interest that the so-called "clearing reaction" results from the action of heparin to break down triglycerides in the circulation to fatty acids which are bound by serum albumin.⁶

The fatty acids are found in the serum in low concentrations after meals, varying from 0.3 to 0.5 mEq. per liter (8 to 12 mg. per 100 cc.) and rise gradually with prolonged fasting to 1.5-2.0 mEq. per liter (40 to 50 mg. per 100 cc.). Despite the low concentrations the fatty acids can provide a large number of calories for energy because they so rapidly leave the circulation (half-time about 2 minutes)⁷ and are quickly burned to carbon dioxide. After intravenous injection of palmitic acid labeled with carbon¹⁴, radioactive carbon dioxide appears in the expired air within 2 minutes. It has been found that mobilization of fatty acids from the depots into the circulation is influenced by many nutritional and hormonal factors. As described

• As an index to the rate of fat utilization in human subjects, the recovery of all radioactive carbon dioxide in the expired air was measured for one hour following intravenous injection of palmitate-1-C¹⁴. In the normal fasted subject, about 10 per cent of the injected dose was recovered, and the proportion was lowered to about 5 per cent by administration of glucose. With prolonged fasting, the recovery of radioactive carbon dioxide did not change, despite a rising concentration of fatty acids in the serum. This was interpreted as due to the development of a balance between increasing mobilization and oxidation and was thought to indicate increasing fatty acid oxidation.

In chronic undernutrition and diabetes mellitus there was increased fatty acid oxidation due presumably to adaptation to a chronic increase in fat utilization for energy.

Administration of human growth hormone did not increase fat oxidation but prevented the usual inhibition produced by glucose. This was interpreted to mean that growth hormone increases fat utilization only indirectly by inhibiting the usual preferential utilization of glucose over fat.

above, as fasting is prolonged, there is a gradual rise in the content of fatty acids in the blood, presumably to provide fat for fuel in greater amounts. This implies that the mixture of foods used by the body with prolonged fasting consists of increasing amounts of fat. Early demonstration of decreasing respiratory quotient with fasting, approaching 0.7 characteristic of fat oxidation, supports this concept.

The availability of carbohydrate is intimately associated with the mobilization of fatty acids, and this may account for the rise that occurs as fasting is prolonged and carbohydrate stores are depleted. In untreated diabetes, a situation in which the cells of the body cannot use glucose, the concentration of fatty acids in the blood is elevated. Following glucose administration, the concentration of fatty acids in the blood falls and remains low for 2 to 3 hours due to inhibition of mobilization of fatty acids from the adipose depots. Administration of insulin results in a prompt decrease in fatty acid concentration (Chart 1).¹ If the blood sugar falls too low, resulting in epinephrine release from the adrenal medulla, there is a sharp but transient rise in blood fatty acids (Chart 1). The concentration may rise

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Department of Medicine, UCLA Medical Center, Los Angeles.

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Figure 1.—Apparatus for measurement of radioactive carbon dioxide after intravenous injection of carbon labeled fatty acids.

to several times the starting level but usually falls back by the end of one hour.⁵ Epinephrine directly stimulates release of fatty acids from adipose tissue, even *in vitro*, and thus the effect is direct. It is probable that the occasional occurrence of fatty liver, lipemic serum and eruptive xanthomata seen in poorly controlled diabetes results from excessive and prolonged mobilization of fatty acids. These may go to the liver, where they are held in ester form, filling the liver with fat, and be released back into the circulation as triglycerides producing lipemia.

The effects of growth hormone on fatty acid utilization were selected for study since in acromegalic humans and in animals treated with growth hormone there is a change in metabolism. This is characterized by deposition of new protein, enhanced catabolism of fat and depressed utilization of carbohydrate. These studies were undertaken in order to learn more of the mechanism of these changes in metabolism.

In the studies to be described the recovery of total radioactive carbon dioxide in the expired air during the hour following intravenous injection of a tracer dose of labeled fatty acid was used as an index to the rate of fat utilization. The fatty acid used was palmitate labeled with carbon¹⁴ in the carboxyl position. It was bound to human serum albumin by dissolving 1 millimol palmitate-1-C¹⁴ acid (Research Specialties Co.) in warm KOH and adding 0.5 millimol Cutter human serum albumin (salt poor). The sterile solution was injected intravenously through an indwelling needle in an antecubital vein from which specimens of blood were obtained for measurement of fatty acid concentration. A helmet was placed over the head of the subject (Figure 1) and a stream of compressed

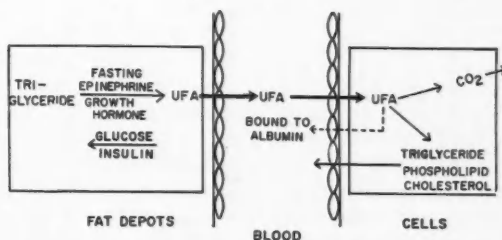


Chart 1.—Scheme of movement of fatty acids (UFA) from fat depots into circulating blood and into liver. Some factors which affect these steps are given.

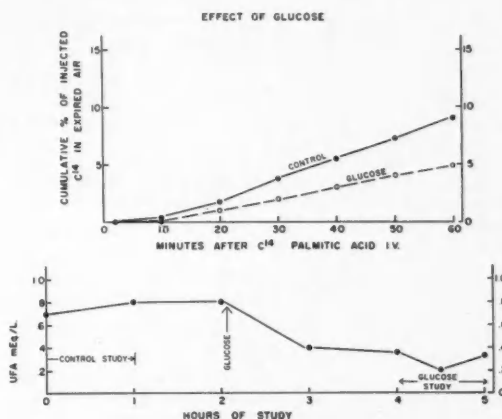


Chart 2.—Shown in the upper part of the chart is the per cent of the injected tracer dose of palmitic acid appearing as carbon dioxide before and after glucose administration. The lower part gives serum fatty acid (UFA) concentration during the period of the entire study.

air carried expired air into an ionization chamber which continuously measured the carbon¹⁴ content of the chamber. The radioactivity was recorded continuously by a pen writer, making it possible to calculate at any time how much of the administered dose had been oxidized. It was not possible in these experiments to measure the carbon dioxide content of the air in the ionization chamber for calculation of the specific activity of the expired carbon dioxide. Hence these results must be considered to be preliminary.

RESULTS

Normal control and effect of glucose: The cumulative outflow of C¹⁴O₂ from a normal young subject during the hour after intravenous injection of a tracer of palmitate is shown in Chart 2. The curve labeled *control* was obtained in the morning in the fasted state. The lower curve labeled *glucose* was obtained during the hour beginning 4 hours later and following 2 hours of glucose administration which was continued during the hour of the second

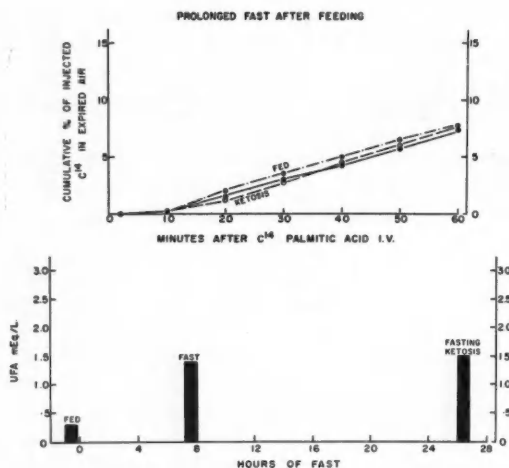


Chart 3.—Results of three studies of fatty acid (UFA) oxidation in a normal subject—the first in the morning after breakfast and glucose, the second in the afternoon and the third the following afternoon.

study. A total of 200 gm. of glucose was given—100 gm. orally and 100 gm. intravenously. These results, which are typical of other similar studies, reveal that glucose administration lowers the outflow of radioactive carbon dioxide to about one-half the control value. The lower part of the chart gives the fatty acid concentration in mEq. per liter of serum. The concentration rose slowly on fasting but decreased sharply following glucose administration.

Prolonged fasting: The results of a series of studies on a normal subject are shown in Chart 3. The first study was made in the morning after breakfast and glucose administration. The subject was then fasted and the second study was conducted in the afternoon. Fasting was continued and the final study took place the following afternoon. By the time of the third study starvation ketosis was present, as manifested by 4+ acetone in the urine. The recovery of radioactive carbon dioxide was the same in all three studies. The bars on the lower part of the chart show the rising concentration of fatty acids in the blood. These results were interpreted to mean that as fasting is prolonged, the pool of fatty acids is enlarging; thus recovery of the same amount of the tracer from a larger pool indicates increasing oxidation of fatty acid. The recovery of the tracer is the same because there is a balance between the increasing pool size and the increasing rate of oxidation of fatty acids.

Chronic undernutrition: The rate of oxidation of the tracer dose of palmitate was studied in four patients who were chronically undernourished (Chart 4). Of these, two had intestinal malabsorption, one diabetes and one cancer. The curves of

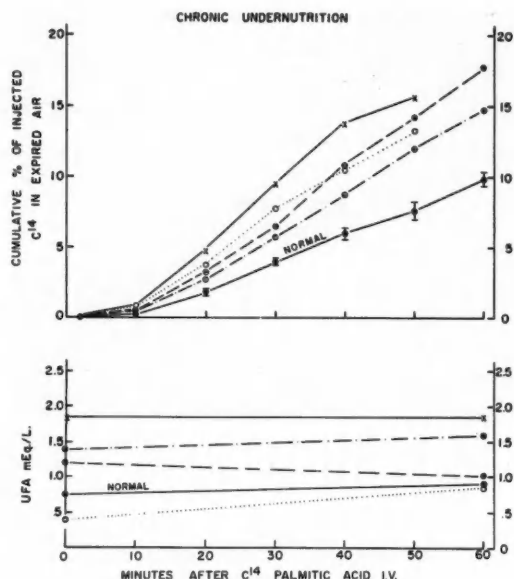


Chart 4.—Fatty acid oxidation studies in four chronically undernourished patients compared with the results in normal subjects. The serum concentration of fatty acids (shown in the lower part of the chart) are mostly above normal.

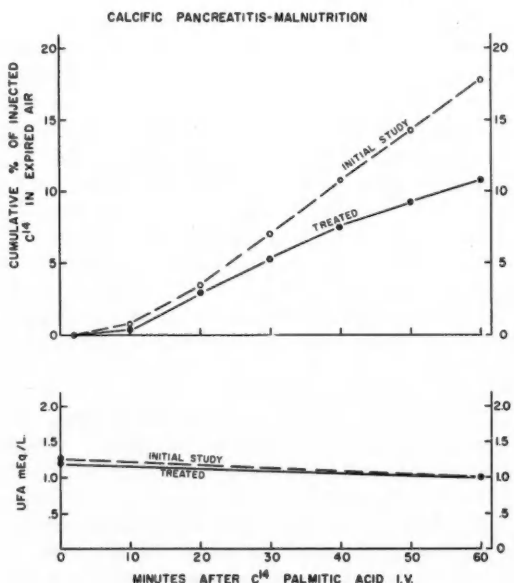


Chart 5.—Results of oxidation studies in a patient with calcific pancreatitis before and nine days after treatment with insulin and pancreatic enzymes. Serum concentrations of fatty acids (lower part of chart) were unchanged.

cumulative recovery of $C^{14}O_2$ are all much higher than the normal curve. Shown in the lower part of the chart is the amount of fatty acid in the blood at the beginning and at the end of each study. In most cases these amounts were above normal. These results were interpreted to indicate that these pa-

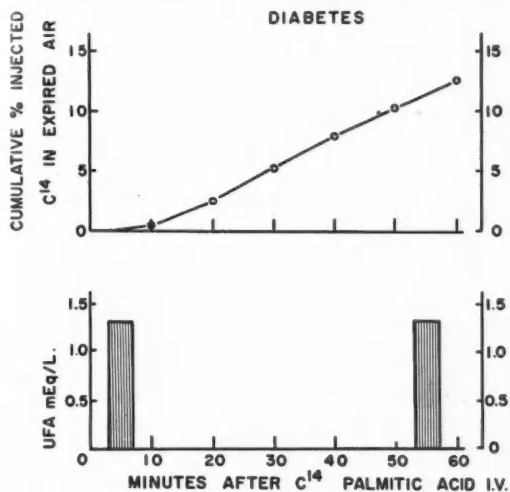


Chart 6.—Average of three patients with diabetes mellitus 24 hours after last dose of insulin. Output of $C^{14}O_2$ (upper) and the serum content of fatty acid (UFA) are above normal.

tients had adapted to chronic undernutrition and the use of adipose stores for fuel, by an increased rate of fat utilization.

One of these patients, with malabsorption due to calcific pancreatitis, was restudied after nine days of insulin and pancreatic enzyme therapy. The recovery of $C^{14}O_2$ after treatment (Chart 5) was within normal limits and was not much more than half the amount before treatment. Shown at the bottom of the chart are the blood fatty acid concentrations, which were unchanged.

Diabetes: The proportion of injected $C^{14}O_2$ recovered from expired air of three patients with diabetes mellitus was significantly higher than for a normal subject. Chart 6 shows the average for the three patients. In the lower part of the chart are the average concentrations of the fatty acids in the blood at the beginning and end of the study. These are also higher than normal. These results suggest that patients with diabetes who are poorly controlled will have elevated content of fatty acid in the blood and will oxidize fats at an accelerated rate due to adaptation to fat utilization. Such a conclusion must be tentative in view of the small number of patients and the lack of specific activity measurements.

Effects of growth hormone: An example of results of preliminary studies on the effects of growth hormone on palmitate oxidation is shown in Chart 7. At the upper left part of the chart are the curves of

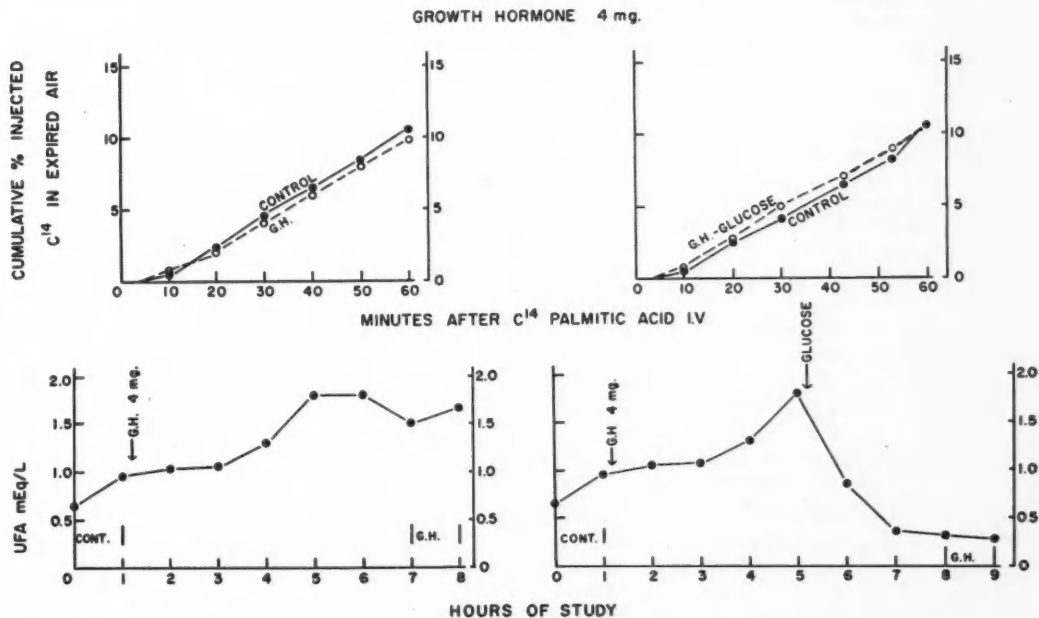


Chart 7.—Effects of human growth hormone on fatty acid oxidation (upper left) and serum concentration (lower left). Effects of growth hormone and glucose (upper right) on fatty acid oxidation and on serum fatty acid concentration (lower right).

outflow of $C^{14}O_2$ before and 7 hours after intramuscular injection of 4 mg. of human growth hormone prepared by Raben.* The curves are not different. Below are shown the fatty acid concentrations in the blood, first the slow rise due to fasting and then the rapid rise due to the fat mobilizing property of growth hormone. The right upper part of the chart shows the result of a similar series of studies with, however, the administration of glucose beginning 3 hours before the second study. In contrast to the usual result of glucose administration (Chart 2), there was no fall in $C^{14}O_2$ recovery from glucose after growth hormone administration. The lower part of Chart 7 shows the usual decrease in the blood content of fatty acid which follows glucose administration. These results were interpreted to mean that growth hormone does not directly increase fatty acid oxidation but increases fat utilization by inhibiting the usual preferential utilization of glucose.

DISCUSSION

These preliminary studies suggest that this technique for measuring the rate of fat utilization in humans yields valid information. The inhibition of fat oxidation by glucose confirms earlier work in rats,⁸ dogs⁴ and humans.³ Thus it appears that the organism subsisting on a mixed diet will preferentially use carbohydrate, and that administration of carbohydrate inhibits both the mobilization of fatty acids from depots into the blood (thus lowering the amount of these acids in the blood) and the oxidation of fatty acids by the peripheral tissues. The inhibition of oxidation is more severe, so that even with a smaller pool of fatty acids much less of the isotope is recovered. The studies of malnutrition and diabetes suggest that in states of chronic undernutrition or underutilization of carbohydrate the

organism adapts by developing the ability to use fat at a more rapid rate.

Growth hormone administration did not increase the rate of fatty acid oxidation as measured by this technique. However, after growth hormone was injected the usual preferential utilization of glucose was blocked. This suggests that the effects of growth hormone to increase catabolism of fat are indirect and secondary to the inhibition of carbohydrate utilization. These studies must be extended and confirmed in order to establish the validity of this hypothesis.

Department of Medicine, UCLA Medical Center, Los Angeles 24.

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*M. Raben, New England Center Hospital, Boston.



Ruptured Aneurysm of the Abdominal Aorta

ROY COHN, M.D., Stanford University

CONSIDERING the ever-present danger of rupture, surgeons generally now look upon elective operation for resection aneurysm of the abdominal aorta, even without symptoms, as entirely justifiable. When the aneurysm has ruptured, operation is mandatory.

Studies of case histories show that fortunately, many aneurysms leak before the final exsanguinating hemorrhage. In fact in some instances in which the aneurysm first ruptures posteriorly, a false sac may form and the final rupture not take place until weeks after the first symptom of leakage. Thus alertness on the part of the physician who first sees the patient is the single most important factor in saving the patient's life, since operating during the stage of leakage greatly increases the chances of successfully removing the aneurysm.

The following four cases, in which the first signs of leakage were observed from four hours to 20 days before the patient entered the hospital, form the basis of this report.

CASE 1. A 63-year-old white man with an old history of tuberculosis of the lungs was admitted July 9, 1958, with complaint of severe pain in the left hip of 30 days' duration. He was known to have a small abdominal aortic aneurysm, first observed some two years previously. Examination of x-ray films taken at that time showed erosion of the anterior body of the third lumbar vertebra and calcification in the aorta compatible with the diagnosis of aneurysm.

The patient held his left leg flexed. No mass could be felt on abdominal examination. No other abnormalities were noted on physical examination or in results of laboratory examination.

On July 29, 1958 a laparotomy was done and the aneurysm was found to have ruptured into the left retroperitoneal space, forming a false sac involving the psoas muscle. The major portion of the aneurysm was resected and continuity restored with a Teflon® graft.

After a long and stormy course including aneurysmal formation at the site of the endarterectomy of the common femoral artery and wound infection, the patient recovered and was discharged January 1, 1959.

• There is a sufficient time lag between leakage from an abdominal aneurysm and the final exsanguinating hemorrhage in most cases so that the diagnosis can be established and surgical treatment instituted.

Under these circumstances technical methods have been developed sufficiently satisfactorily so that a much better salvage rate can be expected.

Four consecutive successful cases are reported as examples.

CASE 2. A 59-year-old white man was referred for treatment of a ruptured abdominal aneurysm. The patient was known to have had a pulsating mass in the abdomen for two years. Six months before admittance to hospital he had had a mild stroke. Thirty-six hours before entering the hospital he noted severe steady abdominal pain radiating to the middle of his back. When examined on entering, the patient was in severe pain and a tender pulsating mass was felt in the abdomen. Blood pressure was 180/100 mm. of mercury. At operation the peritoneal cavity contained 1,500 cc. of free blood. The point of rupture was just below the left renal artery. The aneurysm was resected and a graft placed to restore continuity.

The patient was discharged on the eleventh post-operative day.

CASE 3. A 62-year-old white man was referred with a diagnosis of ruptured aneurysm of the aorta. For one week before entry the patient had noted severe right lower quadrant pain which radiated to the right testicle. Coincidentally, severe pain in the back developed. The patient was first seen by a urologist, who noted an abdominal mass and found no urological abnormality. Except for the tender mass, no abnormalities were noted on physical examination.

At operation, a retroperitoneal hematoma extending from above the renal arteries down into the pelvis was observed. The aneurysm was removed and continuity restored with a graft. Considerable difficulty was encountered in the blood vessel bed distal to the disease, making endarterectomy necessary in both extremities. Once the lower vessels were satisfactorily cleaned out, no further circulatory complications were noted. The patient was discharged on the twelfth postoperative day.

From the Department of Surgery, Stanford University School of Medicine, Palo Alto.

Submitted July 26, 1960.

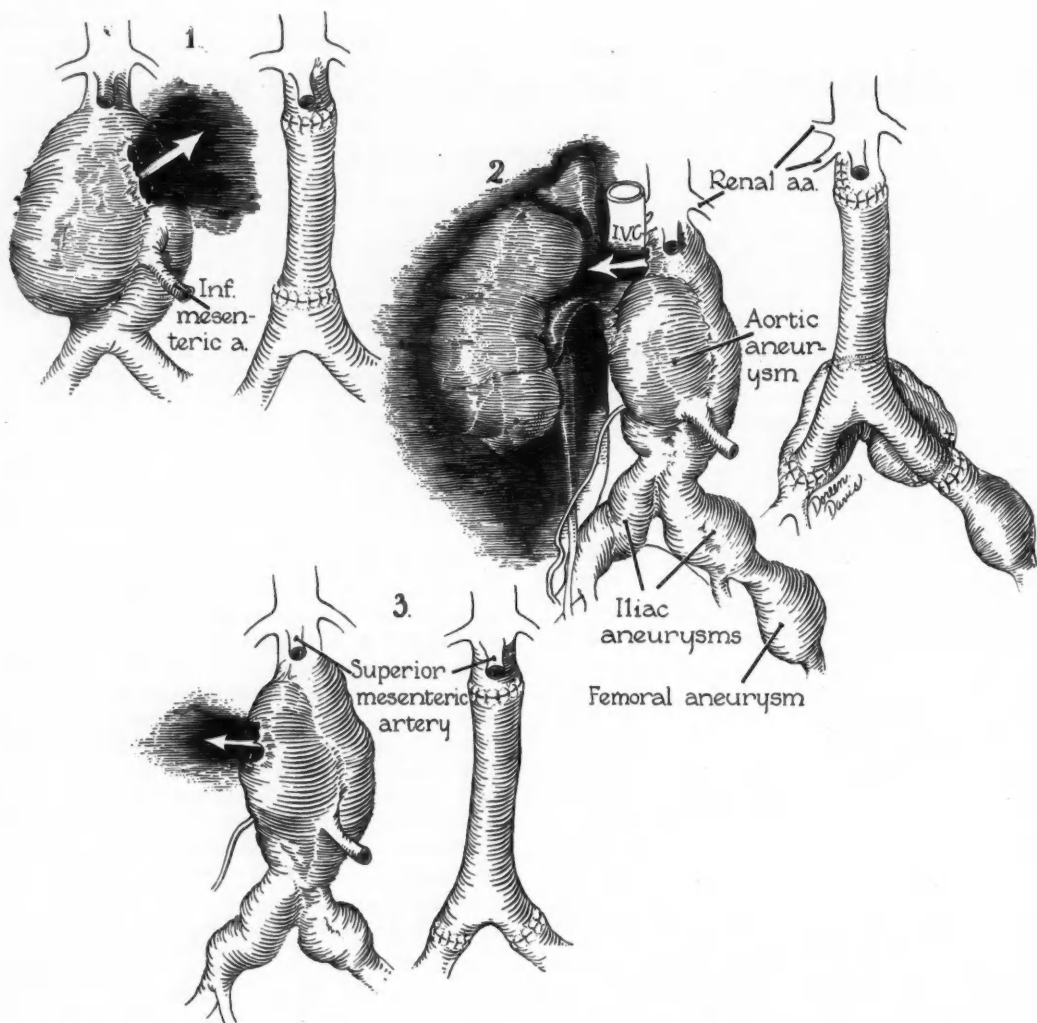


Figure 1.—(1) Site of rupture in Case 2, (2) Site of rupture with placement of graft in Case 4, (3) Site of rupture in Case 3.

CASE 4. The patient, a 68-year-old white man, was referred from the emergency ward, which he had entered in a state of shock four hours after the onset of severe abdominal pain. The patient had previously had a grafting procedure for insufficient circulation in the right leg. The operation was unsuccessful, necessitating amputation three months later.

On examination, shock was obvious. The abdomen was rigid, and no masses could be felt. No right femoral pulse could be felt and the left femoral pulse was weak. Transfusion of blood was started at once. An intravenous pyelogram showed the right kidney displaced anteriorly and laterally. A diag-

nosis of ruptured aneurysm of the aorta was made.

At operation a freely bleeding tear in the aorta was seen, and there was about 2,000 cc. of free blood in the abdomen. The aorta was clamped above the renal branches until sufficient length of aorta below that level could be prepared to accept the graft. The renal branches were occluded 23 minutes. It was then noted that there were aneurysms of both iliac arteries and the left femoral artery. The distal ends of the graft were anastomosed to the common femoral arteries just below the take off of the hypogastric branches, leaving the iliac aneurysms intact. Tracheostomy was done at the conclusion of the operation.

Pneumonitis and ileus complicated recovery. At no time was there any problem with urinary excretion. After slow recovery the patient was discharged on the sixteenth postoperative day.

DISCUSSION

Rupture of an abdominal aortic aneurysm is rather rare. According to the calculations of Burch and DePasquale,³ aneurysms rupture in only about 25 per cent of cases. Their data showed 2,450 deaths from ruptured aneurysm in one year in the United States as compared with 452,507 deaths due to arteriosclerotic heart disease. They said that autopsy statistics in the New Orleans area showed the mortality rate from resection (27 per cent) was higher than the mortality rate from rupture (24.7 per cent).

The reported salvage rate from operation done after rupture has occurred is about 60 per cent. The usual report of operations done in this emergency includes only a few cases—even the reports from clinics reporting the largest series of unruptured aneurysms treated surgically.*

The largest and most recent series of cases of ruptured aneurysm is that reported by McKenzie⁸: Fourteen of 27 patients operated upon died.

The diagnosis of rupture of an aneurysm is not difficult if the pulsating mass has been noted in previous examinations. If there is no history of a mass, the severity of the pain, the distribution of referred pain to the back and extremities, roentgenographic visualization of calcifications at the site of the lesion, displacement of the kidneys and ureters as noted on pyelogram, and obliteration of the psoas shadow suggest the diagnosis. In a discussion of early diagnosis Beebe and coworkers² described areas of ecchymosis on the lower abdominal wall due to the leakage of blood retroperitoneally.

After the diagnosis has been established and adequate amounts of blood are available for transfusion, the patient is taken to the operating room, where a catheter is inserted into the urinary bladder. The abdomen is opened through a midline incision from xiphoid process to pubis. The bowel is displaced into a plastic bag, care being taken to avoid traction or pressure on the bowel, and held out of the abdomen during the course of the operation. If the aneurysm is actively bleeding (as in Case 2 and Case 4 in the present report) control of the proximal aorta must be rapidly established. Merendino⁹ and Savage¹⁰ expressed belief that the best way to reach it is through the thorax by extension of the upper margin of the skin incision, but in the four cases herein reported this was not necessary. Even in Case 4, in which the rent in the aorta was at the level of

the renal arteries and the aorta had to be cross-clamped above this level, the exposure was sufficient to permit pushing the vena cava aside and placing the clamp.

Once bleeding has been controlled from above, it is necessary to isolate the common iliac arteries from below to arrest back bleeding and to prevent the dislodgment of the clot within the aneurysmal sac into the distal circulation. The aneurysmal sac is then opened, the clot evacuated, and the sac cut away. That portion of the sac on the posterior and medial surface adjacent to the vena cava can be left behind without harm if it appears that it is too adherent to the vena cava or vertebral fascia. If the proximal clamp has been placed above the renal branches, as was necessary in Case 4, it is usually necessary to prepare the proximal aorta just below the branches by removing the debris and leaving enough adventitia so that when the clamp is moved below the renal arteries there is still a margin below the clamp to which the prosthesis can be sutured. The inferior mesenteric artery is usually occluded. In Case 4, it was patent. The patient in that case was the only one in whom there was any question about the viability of the left colon. He passed a little bloody mucus on the third postoperative day but had no further suggestion of damage to the bowel.

There was no back bleeding from intercostal arteries in these cases.

After excision of the aneurysm, it is sometimes necessary to perform endarterectomy on the iliac or femoral vessels. In Case 4, in which multiple aneurysms were present, the lower iliac aneurysms were left in place and the prosthesis was sutured to the common femoral artery.

Various types of synthetic prosthetic materials or homografts can be used. The author has found Teflon[®] grafts to be very satisfactory. The graft is preclotted before insertion—a very important point in preventing extensive leakage from the graft surface after removal of the clamps. It is then sutured in place by the standard vascular technique, using 4.0 silk, the anastomosis being made under slight tension. The clamps are released slowly while dry gauze is held firmly around the artery at the graft site. After five to ten minutes the surface bleeding stops spontaneously and inspection can be made for leaks. Appropriate suturing may be done at any point from which blood may be pulsing.

The distal pulses are then inspected. If the pulses noted preoperatively have not returned or the extremity is cold, the lower vessels must be opened and clot removed. Repeated efforts may be necessary. The author has done bilateral lumbar sympathectomy in every case on a purely empirical basis, feeling that it may offer some protection from the

*References 1, 4, 5, 7, 12.

intense vasospasm which is frequently present following prolonged cross-clamping of the aorta. Sometimes the lower pulses do not appear until the second postoperative day. The bowel is inspected as it is returned to the abdomen. The abdominal wall is then closed in the routine fashion.

During the course of the operation, the distal vessels are irrigated with heparin solution every 15 minutes, small volumes of diluted heparin being used. No anticoagulants are used postoperatively.

Invariably after operation a moderate ileus from the extensive retroperitoneal dissection is present. If the patient is decidedly hypertensive, the systolic pressure is kept at about 140 mm. of mercury by administration of trimethaphan camphorsulfonate (Arfonad®).

The circulation of the extremities is carefully observed in the immediate postoperative period. Circulatory insufficiency would require reopening of the vessels to remove clot. While the author has sometimes had this problem to deal with after aortic or iliac thromboendarterectomy, it was not encountered in any of the four cases in the present report.

Department of Surgery, Stanford University School of Medicine,
300 Pasteur Drive, Palo Alto.

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The Guillain-Barré Disease Complex

An Analysis of the Disease with Therapeutic Suggestions and Report of 26 Cases

H. RICHARD McFARLAND, M.D., Oakland

AMONG THE imputed causes of the Guillain-Barré disease complex, infectious diseases are most frequently mentioned, especially the viral.¹⁸ Wilson thought in 1918 that he had cultured the causative virus,³ but his findings have not been confirmed.¹⁷ More recently Bergamasso and Bottiglioni reported culturing a neurotropic virus from patients with this disease, according to von Hagen, who also mentioned enzyme disturbances and toxicity such as heavy metal poisoning among imputed causes.¹⁸ Wider afield are the associations of the disease with serum sickness, postvaccinal sequelae, antibiotic reaction, cervicodorsal arthritis, diabetes mellitus, artificial fever, serum potassium excess in renal failure and malignant growths.¹² In a case observed by the author the features typical of Guillain-Barré disease were manifested immediately after a severe electrical shock.

Some of the foregoing associations must be due to mere coincidence. In others a well-recognized causal association exists (as for example between cervical arthritis and the nerve-root involvement in Guillain-Barré disease) but does not justify fusion of these entities.⁸ In the present state of knowledge it would seem best to consider as Guillain-Barré disease only those conditions in which the cause is unknown and omit those like post-diphtheritic polyneuritis and diabetic neuropathy.

The work of Sabin¹⁴ and Haymaker⁹ materially clarified the pathology of this disease. The most consistent findings occur in the proximal portion of the peripheral nervous system where the nerve roots fuse. The sequence of events according to Haymaker⁹ is as follows:

- a. 1-4 days—edema of the nerve roots.
 - b. By 6 days—disintegration of myelin and swelling of axis cylinder.
 - c. By 9 days—lymphocytic infiltration along the cylinder.
 - d. By 11 days—phagocytosis.
 - e. By 13 days—proliferation of Schwann's cells.
- Following this process regeneration may take place

• The Guillain-Barré disease complex may result from a number of causes and have a wide variety of effects. The basic mechanism seems to be an immunizing or allergic reaction to many pathogens or their products, causing edema of the nerve roots in the spine, specifically about the meningeal covering. Resulting pressure on the axon causes nerve damage proportional to the severity and duration of pressure.

Results in the 26 cases here reported and in other reports indicate that corticosteroids are the treatment of choice, the purpose being to reduce edema as promptly as possible. As might be expected, this therapy is of little value in the post-inflammatory stage of the disease, although prophylactic administration should continue for several months.

Nerve and muscle rehabilitation are the chief aims of later treatment.

primarily in the nerve roots. However, it is felt that involvement may spread centrally from the primary site to involve the neuraxis or distally along the peripheral nerves. Indeed, in the terminal stage some of the spinal roots and peripheral nerves are completely devastated. These findings complement the clinical observation that where motor symptoms predominate the lesions are primarily in the anterior roots, and where paresthesias complicate the picture both the anterior and the posterior roots are involved.

Regarding the central nervous system the histopathologic findings are less conspicuous:

- a. Moderate edema of the brain with acute brain cell changes may occur in fulminant cases.
- b. Petechial hemorrhages may occur in the gray matter of the spinal cord (33 per cent in Haymaker's series).
- c. Perivascular collections of lymphocytes in the white matter and subependymal tissue (20 per cent in Haymaker's series).
- d. The spinal and cerebral leptomeninges may show petechial hemorrhages, hypertrophy and/or hyperplasia of fixed tissue cells. Frequently seen is engorgement of the vessels of the leptomeninges about the cord and nerve roots. Proliferative arachnoiditis about the roots is infrequently seen.

From the Psychiatry and Neurology Service, Veterans Administration Hospital, Oakland, Calif.

Submitted October 27, 1959.

e. Chromatolysis of anterior horn cells (26 per cent in Haymaker's series).

f. Myelin degeneration of the spinal cord and brain stem may occur.

g. Sympathetic ganglia are reported involved by this disease^{9,14} with edema and round cell infiltrates.

Cranial nerves, especially the seventh, the ninth and the tenth, may be affected in the same fashion as the peripheral nerves. The Gasserian ganglion has also been involved.

Other findings are listed below. (The order of the list is the order of frequency as reported by Sabin; the numbers at the end of the line show the number of cases in which the various involvements were reported by Haymaker.)

Heart—myocarditis	7
Kidney—lower-nephron nephrosis (questionably present in 5 additional cases)	7
Adrenals—focal necrosis	1
Muscle—degeneration and/or inflammatory change.....	4
Liver—focal necrosis	2
Spleen—changes are noted that are compatible with infectious mononucleosis	6

In all three of Sabin's cases he reported acute bronchitis and lobular pneumonia. Haymaker reported that 33 out of 55 patients had bronchopneumonia of hypostatic or aspiration types. These findings corroborate the clinical impression that a fatal ending is most often due to respiratory failure.

The disease is preceded in 50 to 60 per cent of the cases by a clinically apparent infectious process; in the others, it has been suggested, infection also occurs but this prodromal phase remains silent or unrecognized. The nervous system then reacts to the organism or its breakdown products in a hypersensitive manner. In effect, the nervous system reacts to an antigen in a relatively specific fashion. This concept is by no means unique; post-exanthematous encephalitis and acute encephalomyelitis are other examples of allergic reactions of the nervous system (experimental allergic encephalomyelitis). Waksman and Adams¹⁹ were able to reproduce in rabbits a Guillain-Barré-like syndrome by injecting into them an antigenic solution containing a portion of the peripheral nerve of the rabbit. They concluded from their studies that the myelin contained a protein or antigen that specifically affected the peripheral nervous system and that acute infective polyneuritis may have an immunologic basis.

Whatever the nature of the pathogenic agent, the response of the nervous system begins with edema, primarily of the nerve roots and specifically about the meningeal covering. The aperture in the dura becomes choked by the expanded myelin and this in turn compresses the axon. This damage is compounded when the meninges become congested and further compress the radicals. Then the sequence of events previously described occurs and the nerve

may either undergo degeneration, if the process continues until irreparable damage occurs, or recovery, if the edema subsides. It is not clear whether or not the edema-impingement-phenomenon is the primary damaging factor or whether cellular reactive degeneration goes on along the entire length of the peripheral nerve.

There is no unanimous agreement on the pathogenesis of the hyperalbuminosis. Reitman and Rothschild¹² believe with Hassin that the spinal fluid is primarily absorbed from the perineural spaces. They feel that if these spaces are relatively occluded by edema or inflammatory reaction there may still be an absorption of spinal fluid but not of the larger protein molecules. Boshes² considers the protein excess to be "due to the increased permeability of the dilated radicular and spinal meningeal vessels." He also emphasizes that the edematous reaction at the juncture of the anterior and posterior roots causes stagnation of cerebrospinal fluid and that this may play a part in the accumulation of proteins. Haymaker⁹ cites several authors who have noted that where proteins from lumbar spinal fluid are increased, the cisternal fluid protein may be normal. Furthermore, Boshes found that in the second or third aspirate tubes the protein was not as plentiful as in the first. This suggests that the hyperalbuminosis is a local phenomenon. It may also explain why in some classical cases of the disease the spinal fluid protein was normal. The author has observed that the protein may continue to increase long after the acute process of the disease has subsided and even while the patient is recovering. This and the other findings point to the importance of stagnation as a cause of the increase in spinal fluid protein.

CASE MATERIAL

The cases to be reported were observed in the Oakland Veterans Administration Hospital between 1949 and 1958. They include all the recognized cases of Guillain-Barré syndrome and were in various stages at time of admission. Most of the patients were studied and treated on the Neurology Service. The author had the opportunity of personally studying the latter five cases in this series.

SALIENT FEATURES OF THE DISEASE

A recognized prodromal disease occurred in 15 of the 26 cases (58 per cent). The preinfection was considered bacterial in nine cases and viral in six cases. The interval of latency from preinfection to paralytic stage varied from 0 to 8 weeks.

The most frequent symptoms at the onset of the paralytic disease were paresthesias and motor weakness. Nine patients, however, complained of pain, especially in the lower extremities.

Extensive motor paralysis is the rule rather than the exception in this disease. All four extremities were involved by motor weakness or paralysis in 19 cases, and atrophy occurred in eight, most often in the small muscles of the hands.

Although this disease is a form of polyneuritis, sensory response was normal in 10 cases. An unusual finding was a transverse myelitis in three patients which gradually cleared as they improved. This indicates that the intramedullary portion of the cord may on occasion be severely but temporarily involved.

The cranial nerves were affected in 10 cases (38 per cent), the ninth and tenth nerves in seven cases, the seventh nerves in six cases and the third nerves in two cases. Singh and Jolly¹⁶ likewise found that the ninth and tenth nerves were the most commonly involved and that only 24 per cent of their patients had seventh-nerve palsy, although many earlier reports emphasized the high proportion of cases with seventh-nerve involvement.^{3,18} It is true that since the paralysis may be subtle and bilateral, it is easily missed. Nonetheless overt seventh-nerve palsy probably occurs in fewer than a third of all cases. Guillain pointed out that "there are cases of polyneuritis associated with facial diplegia which do not belong to the syndrome and in which the etiology is different."⁷

The fundoscopic observation of papilledema in relation to this disease complex is rare (it was an equivocal finding in one case in the present series). Gilpin et al.⁶ reported two cases in 1936; in the patient who had a cerebrospinal fluid examination no elevation of pressure was found. Drew and Magee⁴ reviewed nine cases in the literature and reported one of their own, concluding that the causes of papilledema were still obscure; in four of their cases spinal fluid pressure was within normal limits. In a recent study, Feldman⁵ considered increased pressure of the cerebrospinal fluid to be the probable primary etiological factor in papilledema. Yet it is noteworthy that Haymaker reported that the abnormality of the cranial nerves is similar to that found in the spinal peripheral nervous system; that is, edema and cellular reaction. Furthermore, cerebrospinal fluid pressure as measured on lumbar puncture is usually within normal limits regardless of the stage of the disease. These observations support the position that the papilledema is actually a true optic neuritis.

Cerebrospinal fluid was examined in all the cases reported here. Cells numbered 0 to 30; in only nine of 58 examinations did the count exceed 10, and in only two was it over 20. The counts were distributed evenly throughout the course of the disease.

Cell type was recorded in only two of the six examinations in the first week of disease, and in

TABLE 1.—Cells and Protein in Cerebrospinal Fluid at Different Time Intervals of the Disease (in Series Here Reported)

	Days from Onset of Paralytic Stage				
	0-6	7-15	16-30	30-60	>60
No. of determinations ..	6	5	11	11	19
Prevalent cell type.....	Lymph	Lymph	Lymph	Lymph	Lymph
Mean number of cells...	4.5	8	3	4	5.5
Protein (mg. per 100 cc.)	72	116	142	122	101

both cases the cells were lymphocytes; this type predominated quite definitely in later examinations, a finding in accord with that of Roseman and Aring.¹³ Cultures and virus studies at the state laboratory, done in some cases, were fruitless; other investigators have reported similar negative results.^{9,16}

Cerebrospinal fluid protein content was 22 to 430 mg. per 100 cc.; often it was normal or only slightly increased in the first week of the disease, rose to a plateau between the third and fifth weeks and then slowly declined, though it may remain abnormally high for years, as it did in one case in the series, and may increase on acute exacerbations of the disease as it did in another case. In only one case among those reported here was the protein content not abnormally increased. In this case no spinal fluid specimens were taken between the second and the seventieth day of the disease. Failure to examine the spinal fluid during the height of the disease probably accounts for the failure to detect abnormal increases in otherwise typical cases that have been reported. Recent investigators have emphasized that more frequent testing virtually always discloses the increase,^{13,18} as the findings in the present series corroborate (Table 1). In most cases the increase corresponded to a high colloidal gold curve; in seven there was a mid-zone curve and in five a first-zone curve (with syphilis serologically detected in three of these). Apparently the colloidal gold curve may lag somewhat behind the protein rise.

Albuminuria was detected, as by other investigators,¹³ in the acute phase of the disease, as would be expected in patients with muscular wasting and negative nitrogen balance. Total serum protein and its fractions may be little affected early in the disease, but the total protein may decline later because of chronic tissue wasting. Gastric analysis and glucose tolerance tests disclosed little abnormality.

Electrocardiographic changes, primarily T-wave flattening, were detected in three patients, one of whom was found to have myocarditis. Few patients were so tested, although myocardial changes have been recognized, clinically and pathologically, as a complication of Guillain-Barré disease.¹²

Electromyographic studies were made in four cases, in all four disclosing evidence of abnormality in the lower motor neurons. Marinacci¹¹ states that since the disease must destroy 30 per cent of the

lower motor neurons before it becomes clinically apparent, electromyography may be helpful in early diagnosis.

Electroencephalograms were made on four patients. Findings in one were normal, in another borderline, in the other two characteristic of diffuse slow activity.

Guillain-Barré disease may take one of several courses: Progressive rapid paralysis terminating fatally; rapid fulminant onset and gradual recovery; slow onset and slow recovery; remission and recurrence, which seems related to reinfection rather than to an idiopathic process like that of multiple sclerosis. It may be that the nervous system in the recovery phase is hypersensitive to toxic factors and minor insults that normally could be sustained without neural impairment. Most patients can withstand both viral and bacterial infections without exacerbation of the neural disease. The four courses outlined above cover most cases, the most frequent course being one of slow or rapid onset followed by gradual recovery.

In the series here reported, recovery was complete as early as 10 weeks and as late as 100 weeks after onset (average 37 weeks). The length of observation of the patients who did not recover completely varied from 8 to 98 weeks (average 32 weeks). Ambulation—a definite stage of improvement—was achieved in 5 to 57 weeks (average 29 weeks). The effect of steroids in recovery will be discussed under the subject of treatment.

One patient died of metastatic carcinoma of the esophagus confirmed by biopsy; no necropsy was performed. In the other three cases in which the patient died, complete necropsy was carried out and the diagnosis of Guillain-Barré disease was confirmed. All three died of pulmonary complications—bronchopneumonia in two cases and atelectasis in one.

Two cases previously referred to illustrate the unpredictable effect of intercurrent infection in Guillain-Barré disease. In one of them, while the patient was hospitalized there were two severe outbreaks of carbuncles with pronounced systemic reaction and in one instance with pleural effusion, but there was no exacerbation of neural disease. In the other, however, cellulitis of the right leg was accompanied by facial diplegia, dyspnea and progression of paralysis. Triamcinolone produced a prompt and favorable response and was discontinued after a month. Then a mild upper respiratory infection supervened and caused another exacerbation of the neural disease which promptly subsided when triamcinolone was again administered.

In summary, the Guillain-Barré disease complex usually follows an initiating infection by a period of a few days to weeks. It may occur at any age and

there is no seasonal predominance. The paralytic stage usually begins with paresthesia or pain followed by hypotonic paralysis without involvement of the pyramidal tract. Constitutional and sphincter disturbances are rare. Cranial nerve involvement, evident in about a third of the cases, indicates a bad prognosis; a worse sign is dyspnea, present in about one-fifth. Laboratory findings are usually not significant except for the characteristic increase in spinal fluid protein while the number of cells in the fluid remains within normal limits. Electromyographic findings reflect the spinal-root process of the disease while the electroencephalogram may indicate the degree of cerebral involvement. Death is usually due to pulmonary complications.

Guillain has been much criticized for his insistence on albuminocytic dissociation as a necessary diagnostic feature, but in the present series this condition was invariably present in the spinal fluid. If it is not found on several appropriately timed examinations before suppressive drug therapy is begun, the diagnosis should be seriously questioned. On the other hand, the dissociation is only a supportive finding, since it is present in many other diseases.

TREATMENT

Among the many modes of therapy for Guillain-Barré which have not proven effective, two are perhaps current enough to be mentioned. Multiple vitamins have been used for years without any known effect on the paralytic process. Dimercaprol (BAL) has been tried because it restores the enzyme metabolic balance of neurons in such conditions as arsenical intoxication; as late as 1953 von Hagen and Baker¹⁸ suggested that administration of thiamine, crude liver extract and dimercaprol was the treatment of choice. Most of the recent studies do not support the value of dimercaprol.¹⁶

Antibiotics have of course been used against the primary disease, as also specific remedies (as in diphtheria) when available.

The corticotropins and corticoids were at first proposed nearly concurrently by Seltzer¹⁵ and Stillman.¹⁷ Seltzer and co-workers reported a case of progressive disease with cranial nerve involvement in which dramatic response followed administration of corticotropin and the patient fully recovered in four weeks. Stillman and Ganong studied a similar case with most significant features: On administration of 40 to 80 units of corticotropin daily the eosinophil count decreased rapidly and cerebrospinal fluid protein was reduced in nine days from 132 to 82 mg. per 100 cc. There was concomitant clinical improvement. At this point, though, there was another progression of symptoms with cor-

responding increase in eosinophils and spinal fluid protein. On the theory that the adrenal cortex had become refractory to corticotropin, cortisone was administered intramuscularly at 300 mg. per day. Again there was improvement in clinical and laboratory findings, and the cortisone dosage was gradually reduced to discontinuance four weeks later. Seven months after onset of paralysis the patient had made a nearly complete recovery.

Since its inception many successes have been reported for cortisone therapy. Jackson,¹⁰ reviewing 68 reported cases treated with cortisone, found that early response was often dramatic and that 21 patients were completely well within a month, while only two died. Berlacher and Abington¹ reviewed 24 cases treated with cortisone or corticotropin or both: Of the 16 patients treated while the disease was progressive, 11 had improvement in 48 hours, two others within six days; four relapsed. Of the six treated after the disease had reached a plateau, four were improved in four days. There was no improvement in the three treated during convalescence. Although the reviewers observed no real difference between cortisone and corticotropin therapy in the outcome, relapses during or after discontinuance of corticotropin therapy were common; they accordingly recommended administering 300 to 500 mg. of cortisone daily for two to four days and 100 mg. daily for maintenance thereafter for four to six weeks.

TABLE 2.—Comparison of the Degree of Recovery in Those Treated with Steroids and Those Untreated

	No. Died	In-complete Recovery	Complete Recovery	Complete Recovery
Untreated (20 cases)	20%	15%	50%	15%
Treated with ACTH or Cortisone (6 cases)	0	0	33%	67%

TABLE 3.—Results in Those Cases Treated With Corticosteroids

Case No.	Treatment	Stage of Disease	Results
13	ACTH 30 units intramuscularly every 8 hours for 4 days	Early, progressing	Good results, no progression in disease and decrease in sensory level. Incomplete recovery
17 (second admission)	Cortisone 100 mg. b.i.d. for 8 days, then Cortisone 25 mg. q.i.d. times 2 weeks	Slowly progressive in exacerbation	Good results initially; eventual total recovery
21	Cortisone, 100 mg. b.i.d. continued for three months	Slowly progressive	Good results; complete recovery
23	Prednisolone 10 mg. t.i.d. for four days	Early, progressing	No immediate improvement but eventual total recovery
24	Triamcinolone 6 mg. q8h for 1 month	Maximal disease	No change; incomplete recovery
26	Triamcinolone 6 mg. q8h, two treatment periods, the last continued for 3 months	Progressive	Excellent results; complete recovery

In the series here reported, nearly all patients received multiple vitamins and physical therapy. Four received dimercaprol in therapeutic dosage and in only one case was there (questionable) improvement.

Results with steroid therapy are summarized in Tables 2 and 3. The cases mentioned in Table 3 deserve some comment: Good to excellent results were obtained in four of the five cases in which the disease was progressing. In Case 24 the disease was stationary and no improvement was noted. In Case 23 a four-day course of steroid therapy before admission was said to have been without effect and therefore it was not continued. Despite prolonged triamcinolone administration in Cases 24 and 26, studies of blood and electrolytes as well as of bone structure disclosed no physiologic disturbance.

Steroid therapy is in accord with the concept that Guillain-Barré disease results from swelling of the nerve fibers in the spinal roots during the first five days of the acute paralytic disease or of any exacerbation. Whether this edema be of allergic or infectious origin, the steroids should reduce it. The course of the disease thereafter may be largely the result of injury caused by edema—reactive degeneration. Secondary degeneration begins as early as the sixth day after onset⁹ and is accompanied by a cellular response. Peripheral nerve studies have been so few in this disease that the limits of the process are not clearly defined, but there are suggestions that the entire nerve is involved.¹⁹ During this reaction the edema is presumably subsiding, and the disease process has reached its maximal stage. Since the nerve damage is due to the degenerative process and the cellular response, it is not logical to expect dramatic effects from corticosteroids at this stage² although they may hasten subsidence of edema and thus save a few nerve fibers from further damage.

Once edema has completely subsided there is no rational value for the steroids in the regenerative phase; however, there is suggestive evidence that small doses may counteract exacerbations. In Case 26 there was exacerbation on withdrawal of cortisone after successful use in the acute phase, even though the patient was still receiving an antihistamine (diphenhydramine hydrochloride); cortisone therapy was resumed and remission was complete during the subsequent three months of maintenance therapy. In Cases 21, 24 and 26 (Table 3) there were no relapses during long periods of cortisone therapy. Since cortisone does not always bring about remission, it is important to prevent relapse.¹⁰

In most cases, then, cortisone is the drug of choice. In acute fulminating paralysis when medullary involvement is preminent, corticotropin (ACTH) should be given intravenously; cortisone may be substituted by the third day if there is good clinical response. The newer steroids—prednisone, prednisolone and triamcinolone—are preferable because they do have fewer untoward side effects. In cases with acute downhill course despite cortisone therapy, a trial of ACTH may be warranted.

Although drug therapy has been stressed in this presentation, physical therapy and other measures are equally important. Following is a brief outline of the treatment at Oakland Veterans Administration Hospital:

A. Immediate measures in the acute phase

1. Diagnosis by
 - a. Neurological examination
 - b. Cerebrospinal fluid examination
 - c. Indicated laboratory procedures.
2. Assessment of vital capacity and respiratory function (apply a respirator if any question of respiratory embarrassment exists).
3. Absolute bedrest.
4. Positioning in bed with assistive devices, orthopedic mattress with alternating pressure pad, or frequent turnings, and early use of splints and/or bedboard.
5. Gentle passive exercise of involved muscle groups through a full range of motion twice a day.
6. Steroid therapy if a question of progressive disease exists.
7. High caloric, high protein diet.
8. Salicylates and/or codeine substitutes for pain (barbiturates and narcotics are not necessary).
9. Prompt treatment of all complications, the most frequent:
 - a. Respiratory infections
 - b. Myocarditis

- c. Urinary tract infections
- d. Fecal impactions.

B. Steps after acute process:

1. Manual muscle test and measurements.
2. Galvanic stimulation to muscles considered moderately weak.
3. Daily Hubbard tank bath with assistive underwater exercises.
4. Blow bottles to improve vital capacity if indicated.
5. Except for above measures, continued bedrest for a total of two months.

C. Rehabilitation after two months:

1. Physical therapy ambulatory classes; splinting for weak muscle groups.
2. Continued electrical stimulation to weak muscles.
3. Supervised exercise in swimming pool.
4. Self-care evaluation and occupational therapy.

Bedrest in the first two months is intended to allow the earliest maximal regeneration of neural tissue. It is felt that if damaged axons or nerve cells are stimulated, their recovery phase is lengthened. It should be kept in mind that there may be mild cases with rapid recovery which will not require a full two months of bedrest.

2nd General Hospital, APO 180, New York, New York.

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A Simple Way to Drain a Subungual Hematoma

TROY G. ROLLINS, M.D., Woodland

THE RELIEVING OF PRESSURE in a subungual hematoma nearly always evokes expressions of gratitude from the patient. While the method described below probably is used by many physicians, it seems worthwhile reporting for those who are not acquainted with it.

The instruments needed are a paper clip with one prong bent outward at a 90 degree angle, a Kelly forcep and an alcohol lamp. After the nail plate has been prepared with alcohol or other suitable antiseptic, the paper clip is grasped with a Kelly forcep and the extended prong is heated in the flame of the spirit lamp until it becomes red. With

the patient's finger held steady to prevent jerking of the hand during treatment, the heated tip is pressed lightly against the nail plate over the hematoma. Usually it penetrates the nail quite easily and the hematoma drains, with decided relief of pain, as soon as it is withdrawn. Since the heat is readily dissipated as the tip of the clip burns through the nail plate and enters the encapsulated blood, there is little danger of causing a thermal burn of the nail bed.

This method is less painful than drilling of the nail plate, the procedure takes only a few seconds as against five to ten minutes for drilling, and the temperature of the probe provides comparative sterility.

Woodland Clinic, Woodland.

From the Department of Dermatology, Woodland Clinic, Woodland.
Submitted June 27, 1960.

Rabies

Suggested Indications for Treatment of Persons After Exposure to Infection

THE OUTLINE below was prepared by the California State Department of Public Health and the California Conference of Local Health Officers for use as a general guide in an effort to provide a reference source which will be helpful in answering the many detailed and complex questions which arise regarding management of patients who may have been exposed to rabies.

Early and adequate local treatment of a bite wound is of primary importance and may modify judgment as to systemic treatment. Adequate field investigation and facts and circumstances associated with the bite may also affect the treatment indicated.

The reference symbols 1 through 8b in the outline refer to the supplemental notes printed following the outline.

Nature of Exposure	Health Status of Biting Animal		Suggested Systemic Treatment ^{8*} (In addition to Local Treatment ³)
	At Time of Exposure	During Observation Period	
I. No lesion; indirect contact only.	Rabid	—	None
II. Licks of:			
(1) Unabraded skin	Rabid	—	None
(2) Abraded skin, ⁵ scratches ⁵ and unabraded or abraded mucosa.	(a) Healthy	Healthy	None ⁴
	(b) Healthy	Clinical signs of rabies ² or proven rabid (laboratory ⁶)	Start vaccine at first signs of rabies ² in animal. ⁴
	(c) Signs suggestive of rabies ²	Healthy	Start vaccine immediately; stop treatment if animal is normal ² on 5th day after exposure.
	(d) Rabid, escaped, ⁷ killed, ⁷ or unknown	—	Start vaccine immediately.
III. Bites:			
(1) Mild exposure (other than multiple bites or face, head or neck bites).	(a) Healthy	Healthy	None
	(b) Healthy	Clinical signs of rabies ² or proven rabid (laboratory ⁶)	Start vaccine at first signs of rabies ² in animal. ⁴
	(c) Signs suggestive of rabies ²	Healthy	Start vaccine immediately; stop treatment if animal is normal ² on 5th day after exposure.
	(d) Rabid, escaped, ⁷ killed, ⁷ or unknown.	—	Start vaccine immediately.
(2) Severe exposure (multiple bites or face, head or neck bites).	(a) Healthy	Healthy	Serum immediately ^{8b} ; no vaccine as long as animal remains normal. ⁴
	(b) Healthy	Clinical signs of rabies ² or proven rabid (laboratory ⁶)	Serum immediately ^{8b} ; start vaccine at first sign of rabies. ²
	(c) Signs suggestive of rabies ²	Healthy	Serum immediately, ^{8b} followed by vaccine. Vaccine may be stopped if animal is normal ² on 5th day after exposure.
	(d) Rabid, escaped, ⁷ killed, ⁷ or unknown.	—	Serum immediately, ^{8b} followed by vaccine.
	(e) Wild (skunk, bobcat, fox, bat, etc.) ⁷	—	Serum immediately, ^{8b} followed by vaccine.

*The reference symbols in this outline refer to the numbered paragraphs in the Supplemental Notes on the following pages.

SUPPLEMENTAL NOTES TO SUGGESTED INDICATIONS FOR POSTEXPOSURE ANTIRABIC TREATMENT

1. Origin of Recommendations

The accompanying suggested indications for post-exposure treatment of persons exposed to rabies are based in part upon recommendations of the World Health Organization Expert Committee on Rabies, Third Report (Wld. Hlth. Org. Techn. Rep. Ser. 121, 1957). Some difference of opinion concerning detailed aspects of the treatment of persons who may have been exposed to rabies exists among recognized authorities. Also, the attending physician must exercise judgment, which will logically result in variation in therapeutic procedures for individual patients based on the circumstances under which exposure occurs and the clinical condition of the patient. These variable factors with reference to authoritative knowledge and to the circumstances surrounding the particular occurrence can be expected to influence the pattern of therapy used in specific situations.

2. Utilization of Veterinary Clinical Judgment

a. *Clinical signs of rabies or signs suggestive of rabies* in judgment of a veterinarian.

b. *Healthy or normal* in judgment of a veterinarian (see Paragraph 2, Subdivision b, Section 2606 of Title 17, California Administrative Code re isolation of biting animals).

c. *Rabid* in judgment of a veterinarian.

It should be emphasized that under California law, only a veterinarian is legally qualified to express clinical judgment regarding a biting animal. This is of particular import when decision re human antirabic treatment is to be based upon such clinical judgment.

3. Local Antirabic Treatment of Wounds

The early and adequate local treatment of a wound is of primary importance and may modify the indications for further treatment.

a. *Cleansing with Soap or Detergent Solution*—It appears that any bland procedure, such as washing with copious amounts of soap and water, results in lessening the quantities of rabies virus that may be present in a bite wound.

b. *Local Infiltration of Antiserum*—It appears that there is now sufficient experimental evidence to show that the infiltration of antiserum into the tissue beneath the wound, when this is feasible, is effective in the prevention of rabies. The WHO Expert Committee on Rabies, Third Report (1957), "considers this local use of antirabies serum very useful, regardless of the systemic treatment after exposure."

The dose of antiserum used in local infiltration will be dictated chiefly by the site of the bite. However, where possible, not less than 5 milliliters is recommended. *Sensitivity to serum should be tested before serum is used.* (See Note 8b below, re systemic use of antiserum, serum reactions and sensitivity testing.)

c. *Use of Nitric Acid*—The specific value of nitric acid applied locally to bite wounds up to four hours after infection is clear. However, the disadvantages of the pain, scarring and delayed healing of wounds have to be weighed in each situation against the efficacy of the procedure. Nitric acid, available universally, would appear to be particularly useful in deep puncture wounds where washing or irrigation would not be expected to reach the depths of the wounds. When used it should be neutralized after five minutes by soda bicarbonate.

d. *Suturing of Wounds*—It is recommended not to suture bite wounds immediately due to evidence that the closure of a wound is a contributing factor to the development of rabies infection.

e. *Antiseptic and Antibiotics*—The application of ordinary antiseptics and the local use of antibiotics, while they have no prophylactic value against rabies, may follow local treatment to combat bacterial infections.

f. *Tetanus Toxoid or Antitoxin*—May be given as may be deemed indicated.

4. Alternative Schedule of Treatment

It is fully recognized that in certain situations specific conditions may warrant modifications of the accompanying suggested indications for treatment, e.g., exposure, especially in young children or where a reliable history cannot be obtained, and particularly in areas where rabies is enzootic, even though the health status of the biting animal at the time of exposure is considered to be healthy.

One possible modification in treatment is that, following adequate local treatment of the wound, as noted above under Note 3 above, two or three doses of vaccine (one dose daily) be given and no further doses as long as the animal remains healthy. If the animal remains healthy under veterinary observation for five days following exposure, no further treatment need be considered (see Paragraph 2, Subdivision b, Section 2606 of Title 17, California Administrative Code re isolation of biting animal).

5. Abraded Skin or Scratches

a. *Licks of abraded skin or scratches* without eschar or less than 24 hours old at time of exposure

should be considered as requiring antirabic treatment.

Licks of abraded skin or scratches with eschar or more than 24 hours old at time of exposure may be considered as intact skin and not requiring antirabic treatment.

b. *Abrasions of skin or scratches inflicted by the claws of a suspected rabid animal* should be considered as constituting a possible exposure to rabies. At time such injuries may be quite severe. The possibility of exposure to rabies arises from the standpoint that if the animal were rabid and virus was present in the saliva, the virus could be present on the claws of the animal via licking of the paws in the immediate past, i.e., just prior to the infliction of the abrasion or scratch wound. Hence, decision re antirabic treatment of persons incurring injuries inflicted by claws of an animal should be guided by the same considerations as for animal bites, i.e., the degree and location of the wounds and the health status of the animal at the time of inflicting the injury and during the usual period of observation thereafter.

6. Laboratory Diagnosis of Rabies

The most immediate examination done for rabies is the *microscopic examination* of brain tissue of the suspect animal for the presence of Negri bodies. The presence of Negri bodies is pathognomonic of rabies infection. The absence of Negri bodies, however, does not rule out the presence of the infection (see Note 6a below).

The *mouse inoculation test* is a second examination. It is routinely performed on those specimens in which the microscopic examination for Negri bodies was negative, inconclusive or could not be performed satisfactorily due to the unsuitable condition of the brain material. The incubation period in inoculated mice developing rabies may range from five to 23 days. The average incubation period in positive tests in the California State Department of Public Health laboratories is about 12 to 14 days. Inoculated mice are held and observed for 30 days before a negative report is rendered.

In instances where typical Negri bodies cannot be demonstrated in inoculated mice which are dying, *serum neutralization tests* may be done to establish or rule out the presence of rabies virus as the pathogenic agent killing inoculated mice.

a. *Relative Significance of the Microscopic Examination for Rabies With Regard to Antirabic Treatment Decision*—While the presence of Negri bodies is pathognomonic of rabies infection, their absence does not rule out the presence of the disease. The development of Negri bodies in the brain of an infected animal to a large degree depends on

the duration of the clinical illness and such factors as strain variations in "street" rabies virus and species of animal involved.

In California, considerable data have been accumulated and tabulated on rabies examinations performed by the State Department of Public Health during the ten-year period 1950-1959. By and large, the vast majority of the total of 11,571 animals examined for rabies by the State Department of Public Health, have originated from areas affected with wildlife rabies.

The relative significance of the microscopic examination for rabies in animals originating from wildlife rabies affected areas of the state has been low. Only 249, or about 42 per cent of the total of 589 animals confirmed as rabid by mouse inoculation have revealed Negri bodies on microscopic examination.

b. *Species Variation in Frequency of Negri Bodies*—There exists wide variation in the relative frequency of Negri bodies in the various species of animals examined by the California State Department of Public Health during the period 1950-1959, as follows:

Frequency of Negri Bodies in Animals Examined Microscopically for Rabies and Confirmed Rabid by Mouse Inoculation Tests, California State Department of Public Health, 1950-1959

Species	Confirmed by Mouse Inoculation	With Negri Bodies	
		Number	Per Cent*
Total	589	249	42
Skunk	326	183	56
Dog	107	32	30
Fox	54	14	26
Bovine	47	11	23
Cat	12	2	17
Bat	23	5	22
Bobcat	8	1	13
Raccoon	5	1	20
Horse	5	....	....
Goat	1	....	†
Sheep	1	....	†

* Percentages calculated to nearest 1 per cent.

† Percentage not calculated where the number of animals found positive by mouse inoculation total less than five.

7. Relative Risk of Rabies Infection

In weighing the question of antirabic treatment of persons exposed to animals, consideration must be given to the risk of incurring a serious reaction to treatment versus the risk of incurring rabies infection. The risk associated with antirabic treatment is well known and reaction rates have been reported by various authorities. On the other hand, the risk of incurring rabies infection with any particular exposure usually cannot be so well established. However, certain data are available which permit analogies to be drawn, e.g., the relative frequency of positive findings for rabies by species of animal examined. The data following provide a

basis of experience upon which conclusions can be drawn relative to the risk of incurring rabies infection from various species of animals in California:

Frequency of Positive Findings for Rabies by Species, Animals Examined by the California State Department of Public Health, 1950-1959

Species	Number Examined	Positive for Rabies	
		Number	Per Cent*
Total†	11,571	1,032	9
Skunk	1,158	662	57
Bovine	216	64	30
Bobcat	44	10	23
Goat	5	1	20
Fox	405	72	18
Badger	6	1	17
Horse	36	5	14
Bat	266	33	12
Sheep	9	1	11
Dog	3,751	164	4
Raccoon	173	5	3
Coyote	58	1	2
Cat	2,336	13	1
Gopher	731	....	....
Squirrel	643	....	....
Rat	539	....	....
Mice	330	....	....
Hamster	199	....	....
Rabbit	156	....	....
Chipmunk	106	....	....
Opossum	85	....	....
Muskrat	69	....	....
Monkey	54	....	....
Weasel	50	....	....
Mole	44	....	....
Guinea Pig	42	....	....
Deer	16	....	....
Chinchilla	8	....	....
Swine	7	....	....
Bear	4	....	....
Mink	4	....	....
Porcupine	3	....	....
Mountain Lion	3	....	....
Other‡	15	....	....

* Percentages calculated to the nearest 1 per cent.

† Does not include 68 brain specimens from animal species not specified by those submitting to the laboratory all of which were negative for rabies.

‡ Includes two each ape, ocelot, coatimundi, hawk, and seal, and one each beaver, owl, parakeet, snake and tapir.

a. *Species of Animals Considered Associated with High Risk of Infection*—In California, exposure to such species of animals as the striped skunk, spotted skunk ("civit or phobey cat"), fox, bobcat, bat, dog, coyote, raccoon, cat, weasel and opossum in descending order of risk, should be considered to be associated with a relative high risk of rabies infection until proven otherwise.

b. *Species Considered Associated With Low Risk of Rabies Infection*—Exposure to such species as the gopher, squirrel, rat, rabbit, mice, chipmunk, and mole are considered to carry a low order of risk of rabies infection and seldom should require antirabic treatment of exposed persons.

In evaluating the degree of risk, it should be kept in mind that during any specific time period in a particular area, the relative frequency of rabies

infection in animals submitted for rabies examination may range far below or far above the average figures quoted above. Local health officers, however, can furnish specific data on current experience within their areas.

8. Systemic Antirabies Treatment

a. Relative Value of Various Treatment Regimes:

- (1) Hyperimmune antirabies serum plus vaccine
- (2) Vaccine alone
- (3) Antirabies serum alone

The general principles on which the accompanying suggested indications are based are that in mild exposures, a course of vaccine following the recommended local treatment is sufficient, whereas following severe exposures, the systemic administration of hyperimmune antirabies serum together with vaccine should be employed.

b. *Systemic Use of Hyperimmune Antirabies Serum*—The experimental use of antiserum in animals indicates that the chief effect of systemically administered antiserum is a definite prolonging of the incubation period. Antiserum alone, however, apparently has limited saving effect. Indications for antirabies serum in conjunction with vaccine are those persons in which the incubation period are likely to be very short.

(1) *No Time Limit on Use*—In the systemic use of antirabies serum, although it is recognized that the earlier the treatment is started the better, there is no time limit as to when serum can and should be given after exposure.

(2) *Timing of Use of Antiserum Combined With Vaccine*—If passive (serum) antibodies are maintained for too long a period by repeated systemic doses of antiserum, or if less than 14 doses (one dose daily) of vaccine are given even after a single dose of antiserum, there is definite interference by the serum with the antigenicity of the vaccine, as measured, by neutralizing antibody response. Experiments have shown that the interference effect is a true phenomenon which can be demonstrated in laboratory animals and that the interference with active antibody response to the vaccine is also paralleled by an interference with the production of immunity to virus challenge. Doses of vaccine given after the tenth day, however, are active in overcoming such interference.

Therefore, it is recommended in the combined use of antiserum and vaccine in severely exposed individuals that only a single dose of serum be given followed by at least 14 doses of vaccine.

(3) *Serum Reactions and Sensitivity Testing*—Reactions to hyperimmune rabies antiserum, even though concentrated and purified, occur approximately to the same degree as with other sera of equine origin. An immediate anaphylactic type re-

action should be avoided by the routine use of an intradermal or ophthalmic test for sensitivity.

In the case of a positive sensitivity test, the usual precautions of desensitization should be followed.

The percentage incidence of the delayed type (serum sickness) reactions has been stated by the WHO Expert Committee on Rabies, Third Report (1957) to have varied from zero to twenty. In California, of 16 persons receiving antiserum, eight incurred reactions.

These should be treated according to usual practice. Since corticosteroid and ACTH have possible antibody-depressing activity, however, their use in treatment of allergic reactions in persons exposed to rabies should be avoided if possible.

c. Vaccine Treatment:

(1) *Nerve-Tissue Vaccines (Semple and Harris)*—Actively induced neutralizing antibodies from daily inoculations of nerve-tissue vaccine are not detectable in many individuals until between the tenth and fifteenth day. In severely exposed individuals in which the incubation period is likely to be short, hyperimmune antirabies serum should be used (see Note 8b) above. While the efficacy of human antirabic treatment is difficult to document, the saving effect of nerve-tissue vaccines is well attested by their extensive field use throughout the world for many years.

(2) *Duck-Embryo Rabies Vaccine*—The question of the efficiency of killed-virus duck-embryo rabies vaccine in man cannot be answered definitely at this time. Such question can only be answered relatively and in such indirect terms as development of active serum neutralizing and complement-fixation antibody titer in man and ability of the duck-embryo vaccine to protect or immunize laboratory mice (standard mouse potency test) and other animals, such as dogs, against "street" rabies virus as compared to results obtained with nerve-tissue rabies vaccine.

Similar limitations, i.e., inability to say that the development of active serum neutralizing or complement-fixation antibody titer is synonymous with development of immunity and the possibility of differences in ability of a given vaccine to protect man as compared to laboratory animals, also apply to the nerve-tissue rabies vaccines used in man. However, the mass of data accumulated over many years of extensive use of nerve-tissue rabies vaccines in man leaves little doubt that nerve-tissue vaccines are of value, particularly since the innovation of the standard mouse potency tests. In addition, Johnson⁷ has shown that phenolized killed-virus nerve-tissue rabies vaccine produces good protection in dogs against challenge with "street" rabies virus.

In the case of duck-embryo vaccine, evaluation

has been based chiefly upon determining the ability of the vaccine to produce serum neutralizing antibody in a relatively small number of persons.

Review of the published reports¹⁻⁴ on the use of duck-embryo rabies vaccine indicates that:

(a) Serum neutralizing antibody titer development in man and monkeys²⁻⁴ has not been uniform or high as compared to the 100 per cent obtained with nerve-tissue rabies vaccine, e.g., by Fox.⁶ Particular attention is called to serologic studies in two monkeys³ where neutralizing antibody titer is reported at 15 and 20 days after vaccination with duck-embryo vaccine, but dropped to very low levels by 30 days.

(b) No detailed information is available in published reports¹⁻⁴ on potency tests in mice as compared with nerve-tissue vaccine.

(c) There are no tests showing protection against challenge with "street" rabies virus in dogs or other animals. It is noted that 43 dogs were given either duck-embryo vaccine or rabbit brain vaccine with 80 per cent in both groups reported to show demonstrable serologic antibody titer after 30 days; however, these dogs were not challenged with "street" rabies virus.³

The chief criteria to be used in evaluating duck-embryo rabies vaccine, should be potency test results and tests showing ability of the duck-embryo vaccine to protect dogs and other animals against challenge with "street" rabies virus. Such results should be compared to that obtained with nerve-tissue vaccine and Flury strain low egg passage (LEP) canine rabies vaccine, the latter which has been demonstrated to provide complete protection in dogs to challenge with "street" rabies virus at 39 months after vaccination.⁸

In the absence of such data, the State Department of Public Health feels that the duck-embryo vaccine cannot be recommended as being preferable to the nerve-tissue rabies vaccine, for use in man, at this time.

The impetus for duck-embryo rabies vaccine arises from the risk of neuroparalytic accidents which occur occasionally with use of mammalian brain-tissue vaccines. Inasmuch as the duck-embryo rabies vaccine has been reported to be almost devoid of encephalomyelitis producing qualities as tested with Freund adjuvant in laboratory animals,⁵ it is expected that neuroparalytic accidents would be materially reduced, if not eliminated with the use of duck-embryo or Flury strain chick-embryo rabies vaccine.

At the present time, therefore, it remains a question of clinical judgment on the part of the attending physician as to whether to use the nerve-tissue vaccine or the duck-embryo vaccine in a particular patient. The potency of the nerve-tissue vaccine has

been demonstrated conclusively and there is still room for doubt as to whether duck-embryo vaccine achieves the same degree of potency. On the other hand, the relatively slight risk of a neuroparalytic accident from the vaccine is less with the duck-embryo vaccine. In some instances, both types of vaccine have been used in a single course of prophylactic therapy, i.e., nerve-tissue vaccine for the first seven injections and duck-embryo vaccine for injections eight through fourteen.

A change to duck-embryo rabies vaccine would appear to have merit in persons showing signs of severe reaction to nerve-tissue vaccine rather than running the risk of severe postvaccinal paralysis in continuing the latter vaccine.

(3) *Flury Strain High Egg Passage (HEP) Rabies Vaccine*—Interest in the possible use of HEP Flury strain rabies vaccine in man is twofold, i.e., for safe postexposure emergency immunization and for primary preexposure immunization (sensitizing course) and maintenance (booster inocula) of immunity in particular groups of persons at high risk of exposure, e.g., veterinarians, dog handlers, laboratory personnel, and postal and other deliverymen.

Experimental work to date (1957) indicates that on the basis of uniformity and level of neutralizing antibody response, HEP Flury vaccine does not equal a course of Harris or Semple type nerve-tissue vaccine. However, promising results have been obtained with the use of HEP Flury strain vaccine for inducing and maintaining neutralizing antibody titer on a "before exposure" basis. Use of the product in recipients of previous "Pasteur" treatment, some as long as 20 to 25 years ago, resulted in rapid neutralizing antibody response to single HEP booster inoculum with antibody titers, which often surpass those induced by a full primary course of nerve-tissue vaccine.

While HEP Flury strain vaccine shows promise, the product is not yet available commercially.

(4) *Re-treatment*—Fairly often a situation arises in which a person previously exposed to infection and treated with vaccine is reexposed to rabies. The question as to whether treatment should be reinitiated and, if so, on what basis, then arises.

Recent studies in recipients of "Pasteur" treatment indicates that detectable neutralizing antibody titer commonly persists for at least five years after a single course of vaccine and for 15 or more years after re-treatment. In previous recipients of "Pasteur" treatment, it has been found that a single dose of high egg passage (HEP) Flury strain vaccine resulted in a prompt and significant rise in neutralizing antibody titer which often surpasses those induced by a full primary course. (See Note 8c (3) above, re HEP Flury strain vaccine.)

Such work indicates that "Pasteur" treatment

conditions the recipient so that at any time within 20-25 years he will respond rapidly to antigenic booster inoculum. The WHO Expert Committee on Rabies, Third Report (1957), states that there is reason to believe that from an immunological standpoint a similar preparation and booster effect may be expected from any potent rabies vaccine. The Committee has modified their 1950 and 1954 recommendations re re-treatment to suggest that on subsequent exposures, a single booster dose be given in the case of mild or moderate exposure, and, in the case of severe exposure, a second booster dose one week later.

(5) *Reactions to Vaccine:*

(a) *Nerve-Tissue Vaccine*—This vaccine is a crude biological product constituting a heavy suspension of "fixed" rabies virus infected rabbit brain in which the virus has been inactivated by various chemical or physical agents, e.g., in Semple type vaccine, phenol is used for inactivation.

All treated patients experience local reaction to administration, usually of moderate severity. However, on occasion, severe and dangerous reactions to vaccine occur, the most important of which involve the central nervous system. Evidence strongly suggests that these latter reactions are an organ specific iso-allergic encephalitic reaction directly related to the multiple injection of the brain tissue contained in the vaccine.

Evidence is that the risk of postvaccinal paralytic reactions tend to increase directly with the number of doses of vaccine administered and occur more frequently in persons receiving a second or more course of vaccine and in those with a history of allergy.

Reports of severe reactions in the United States have varied from as high as one in 600 treatments to as low as one in 7,000.

The degree of involvement of the CNS varies from mild transient weakness to a fatal ascending paralysis of the Landry type. The mortality from these reactions may vary from 10 to 25 per cent, but in those who survive, there are generally few residual sequelae.

If, during the course of treatment, the patient develops constitutional signs or symptoms such as headache, nausea, vomiting, tingling sensations, general lymphadenopathy, or manifestations of general allergy, the course of vaccine should be discontinued. It has been suggested that if continued treatment is deemed necessary, that an avian embryo vaccine be substituted, e.g., duck-embryo rabies vaccine.

(b) *Avian Embryo Vaccine*—Experimental evidence indicates that postvaccinal neuroparalytic accidents do not occur with administration of vaccine prepared from avian embryos (duck-embryo and

Flury strain HEP rabies vaccines). Limited experience in man confirms this observation.

While neuromuscular type accidents have not been associated with the use of avian embryo rabies vaccines, the avian products are not devoid of reactions:

Duck-Embryo Vaccine—Of 42 case histories of antirabic treatment received by the California State Department of Public Health reporting the use of duck-embryo rabies vaccine, 71 per cent reported local erythema, 55 per cent local pain and induration. Fever and body aches and pains were reported by 14 per cent. Two persons (4.8 per cent) incurred urticaria. Only 9.5 per cent reported no reactions.

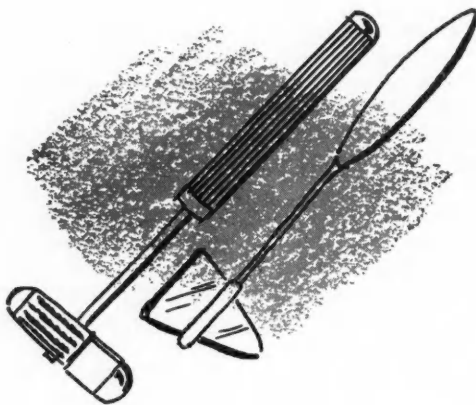
Flury Strain (HEP) Vaccine—Of 129 persons receiving three intradermal injections, spaced five days apart, of Flury strain HEP rabies vaccine in California in January, 1956, only 5.4 per cent reported no reactions and 21.7 per cent reported general reactions such as adenopathy, malaise, body aches, or fever.

Persons known to be sensitive to egg protein should not be given avian origin vaccine unless necessary, and then only with proper precautions.

California State Department of Public Health, Bureau of Health Education, 2151 Berkeley Way, Berkeley 4.

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Postpartum Phlebectomy

EDWARD N. SNYDER, JR., M.D., and
MARTIN H. CRUMRINE, M.D., Pasadena

USUALLY VARICES that develop or enlarge during pregnancy diminish in size after parturition. However, the veins will not return to a normal state if irreversible anatomic changes have taken place. With passage of time varices become larger and more troublesome.⁷

Since patients operated upon for varicose veins spend about the same length of time in hospitals as do postpartum patients, and also about the same time at home in convalescence, it seemed logical to consider carrying out surgical treatment of varicosities in the immediate postpartum period, thus making one stay in hospital serve two purposes.

We performed saphenous ligation and stripping on 27 patients in the immediate postpartum period without postoperative complications. The patients varied from 22 to 39 years of age and had two to six children each; 22 of the patients had three or more children. Fifteen of the 27 patients had a definite familial history of varices. Seven patients had noticed one or more prominent varicose veins while they were in their late teens, before they ever became pregnant. Of the 20 patients who noticed varices only after pregnancy, five did not observe any until the second or third pregnancy. The varices were bilateral in 16 patients, limited to the left leg in eight, and to the right leg in three.

INDICATIONS FOR OPERATION

In general, indications for surgical treatment of varicosities are the same for pregnant patients as for any patient. A special indication is a history of significant or troublesome varices between pregnancies. If the last previous delivery was anything other than normal and uncomplicated, that should be considered a contraindication. We believe the operation should be done at the time of the last planned pregnancy, since pregnancy seems to dispose toward development of new varices. Of three patients in the present series who became pregnant again after operation, two had new varices develop.

All patients are carefully evaluated during pregnancy, and the usual diagnostic tests are per-

• Saphenous vein ligation and stripping was performed on 27 patients in the immediate postpartum period without complications. Doing the operation at this time saves time and money. Technically it is easier to do postpartum than during pregnancy, and the patients have less postoperative discomfort than is usual with phlebectomy at other times.

formed.^{4,5} However, a history and visual examination give most of the necessary information. All the patients in the series had incompetency of both the greater saphenous vein and the perforator veins. In many cases the incompetency of the perforator vein was the more pronounced. In only three patients was incompetency sufficient to warrant operation of the lesser saphenous system.

Time of Operation

As soon as feasible after delivery, we are notified by the obstetrician. The patient is then reevaluated, and if operation is mutually agreeable it is performed on the second postpartum day when possible, but holidays, weekends and surgical schedules sometimes interfere with this. No complications occurred that were attributable to elective operation so soon postpartum.

Technique

The authors cannot improve upon the excellent detailed description of surgical technique for varicose vein operations given by Homans³ in 1916, and Myers⁵ in 1955. However, several points bear stressing. Spinal anesthesia was used in 15 cases, and general anesthesia in 12. Our anesthesiologists are not hesitant about repeating a spinal anesthetic if both they and the patient so desire. After dissection and ligation of veins in the fossa ovalis, an intraluminal stripper is inserted in the greater saphenous vein from ankle to groin and is allowed to remain in place while the dissection and ligation of the tributaries and perforators, which have been carefully marked out before operation, are completed. Much of this dissection is done with the Mayo extraluminal strippers. All incisions are meticulously approximated after it is ascertained that the wounds are dry. The legs are elevated as high as possible and massaged free of venous blood, then the intraluminal stripper is pulled through to the groin.

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From Huntington Memorial and St. Luke Hospitals, Pasadena.

Excess blood is expressed from the extremity, and then the groin incision, which has been partially approximated, is completely closed. If the removed vein is intact, this completes the operation; otherwise a meticulous search must be carried out to insure complete removal of the greater saphenous venous system. A compression bandage consisting of abdominal pads and wide (4 or 5 inches) Ace bandages is then applied from toes to groin.

The operations took from 80 to 108 minutes in the present series of cases. Recently we have shortened the time in cases of bilateral varicosities by operating on both legs simultaneously.

Postoperative Care

The patient's legs are kept elevated at as steep an angle as is comfortable for her. Early ambulation is encouraged but kept at a minimum during the first few postoperative days, since ambulation if done too enthusiastically leads to excessive edema and bleeding. When the patient is ready to leave the hospital, the large pads are removed from the legs, but the Ace bandages are reapplied.

Antibiotics are not used routinely postoperatively. Most of our patients go home on the second or third postoperative day. Those who stay longer do so for their own convenience rather than because of complications.

The total stay in hospital was four to six days in 20 cases and seven to eleven days in seven cases, including labor, delivery, operation and postoperative days. Several of the patients had been put in hospital several days before delivery because of potential obstetrical complications.

RESULTS

The patients have been enthusiastic about combining delivery and operation, not only because of the saving in time and money but also because they seem to have less postoperative discomfort than the average patient after varicose vein operations. Fifteen of the patients had not had sclerosing injections,

nine patients had had two or three injections, and three patients had had to have many. The results of operation were good to excellent in 23 patients and fair in two. The other two had significant new varices that developed when they became pregnant again.

DISCUSSION

In recent years some investigators have enthusiastically recommended surgical treatment of varices during pregnancy.^{1,7,8} While the relief of symptoms thus obtained by patients incapacitated by varices during pregnancy is gratifying, it seems to us that it is only the rare patient who cannot be managed through this period by nonoperative means. And we agree wholeheartedly with Greenstone⁵ and associates, who caution against phlebectomy during pregnancy for any but the exceptional patient. Rather than subject a pregnant woman to operation for varicose veins, we offer the alternative of doing the operation immediately postpartum.

960 East Green Street, Pasadena (Snyder).

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The Coroner and the Common Law

Part V. Coroner or Medical Examiner?

JESSE L. CARR, M.D., San Francisco

PERIODICALLY IN THE PAST contention has arisen regarding the relative virtues of the medical examiner system and the coroner system. Champions of both systems have been employed to make numerous studies and reports in California. There have been both wide variance and close agreement among the several investigators, but basically they all recognize that the real determining factor in gauging the value of a medicolegal office is the quality of work that it does. The terms *coroner's office* and *coroner system* have carried a stigma in many areas in the past because of the incompetence in some of the jurisdictions as well as because of the adverse historical implications. On the other hand, a new name for incompetence does not change the quality of work nor does a name reduce the standards of a well operated office. It might be that a new title for an official engaged in medicolegal work in the State of California would be desirable, but such a change will require legislative action far out of proportion to any immediate benefits which might be derived from such a change. No title will insure the medicolegal investigating officer's competence, capacity or incorruptibility.

In the final analysis, the adequacy of a medicolegal system depends upon the training of its personnel. In the past, where personnel and financial support were available, offices with meager beginnings have acquired staffs of well trained technicians, secretaries, investigators and consultants who have done good work under a well qualified and well compensated administrator.

In considering the extent to which a system should be developed in any specific locality, one must take into consideration the geographic features, distribution of population, local finances, other economic and social factors, potentialities for growth, office and housing space, load figures and the local philosophy of the area.

If one were to evolve a statewide system for medicolegal investigation, some cooperative balance would have to be established between the urban centers with enough funds to staff a competent office and suburban areas that had no money or personnel or laboratory facilities. In fourteen coun-

ties of California the duties of coroner and sheriff are combined under the charge of one person. In many counties the duties of coroner and public administrator are combined. There are unique factors that justify the combinations in certain instances, but there are areas in the State of California that now have combinations of this sort although they would be better served by separate offices, with each division staffed by a specialist in the field.

Obviously, it is essential at all times that the medicolegal officer of the county work closely with the law enforcement officers and with the district attorney's office, but where the volume of work to be done warrants the expense, separate and individually integrated offices offer the best potential services. Where volume and funds permit, the medicolegal office seems to be best served by a physician, in spite of the judicial and legal requirements of the office. It seems more practical for a physician to acquire the necessary legal knowledge to conduct the legal routines of the coroner than for an advocate or jurist to acquire the medical knowledge essential for medicolegal investigation. The background of experience needed for the best direction of a medicolegal office staff is also overwhelmingly weighted on the medical side.

Some supporters of the coroner-sheriff combination have suggested that the same law enforcement agency should be concerned and charged with not only the responsibility of an initial investigation into the cause of death but also with the detection, apprehension and detention of suspected persons. Others maintain that the coroner or medicolegal officer of the county should only determine the cause of death and should have no further investigative responsibility. Such limitation is, of course, archaic and is not currently acceptable because of the now heavy and still expanding responsibilities of the modern medicolegal investigating system. A middle course between these two extremes offers the most promise.

The Pathologist

No one likes death, not even the people who choose it voluntarily. People commit suicide only because they like death better than the life they have. Death is also generally messy; and dead people, whether embalmed or not, soon become physi-

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cally repulsive. Yet the pathologist, when he is engaged in medicolegal investigation, must examine dead bodies by the necropsy technique; and unattractive and unpleasant though the procedure may be, there is no discipline in which accuracy is more essential or honesty, knowledge and experience at a higher value. The benefits of the necropsy and medicolegal studies are great and accrue not only to science but to society as well. The academic contributions derived from an autopsy study are inherited by posterity, for the final focus of such scientific investigations is on the welfare and future of mankind. Observations at autopsy are constantly being translated into new safety and health programs that become a part of man's progress in the art of living, contributing to his future comfort, security and happiness. Knowledge that this is so helps the medicolegal investigator to overcome some of the repulsive aspects of his work.

Coroners of the 19th and early 20th centuries had little stimulation to make contributions of this order. Neither the statutes of the time nor the attitude of society were such as to whet a scientific interest in the work or to encourage academic research in this field. Coroners were in fact prohibited from such activities by law. It is understandable in the circumstances that the office of coroner deteriorated almost to nullity. Pure scientists, be they social scientists or medical scientists, are unique and peculiar in their attitude. Intellectual curiosity and academic interest coupled with a social conscience establish a part of the formula for their motivation. To function happily and effectively, however, investigators must have legal authority, source material, financial support and a place to work. All these facilities have, at various times, been denied the medicolegal scholar.

With singular exceptions this situation still prevails, but progress is being made. While many of the reports of investigations of our medicolegal system have been unduly critical or prejudiced, they have without exception embraced the principle of improvement of the existing system or a change of the existing system to one with more promise. Better laws, better personnel and better financial support have been routinely mentioned by all. On the other hand, legislators and officials have frequently been indolent and disinterested when confronted with their constituents' medicolegal necessities. Educational institutions, with rare exceptions, have neither established departments of legal medicine nor offered planned courses to matriculate students in the field. Financial support from public sources continues to be meager; bequests are virtually unknown because no individual, or single segment of society, can derive much personal profit from either the support of a single research project or a comprehensive

group program. Yet medicolegal investigation, especially where there is uniformity and competence, profits everyone. The financial responsibility assumed by the medicolegal investigator and the emoluments which hinge upon his findings have become matters of imposing magnitude. Many millions of dollars' worth of insurance policies, indemnities and industrial awards are distributed on the basis of medicolegal studies, but the value of medicolegal findings in criminal cases where either the public safety or the personal freedom of individuals is involved may be even greater. Today, even the best medicolegal consultation available is not good enough to provide all the accurate, impartial scientific work the public needs. Time, money, public cooperation and research must be regularly contributed and wisely used in order to assure each citizen his rights, privileges and safeguards.

RECOMMENDATIONS

In condensing the conclusions, opinions, and recommendations of the committees who have studied the medicolegal problem, the following recommendations predominate:

1. That properly accredited medical societies and legal societies be requested by the State Legislature to establish standards of qualification for personnel engaged in medicolegal investigation. These recommendations should include not only qualifications, but salary scales.
2. That these same agencies be requested by separate or by joint effort of their memberships to establish the responsibility of medicolegal officers within the context of current statutes, and, if necessary, to recommend legislation revising the scope and status of responsible medicolegal officers.
3. That medical schools and major educational centers be requested to intensify and augment training programs in legal medicine for medical students and for postgraduate students as well, and that continuing education for practicing physicians be provided to further acquaint them in newer methods and enlarged scope of forensic pathology. It is believed that an adequate panel of experts may be developed by such procedures for service in respective areas of medical practice.
4. That colleges and medical schools, upon their students' completion of a given curriculum, make available a list of students who are available for employment in medicolegal offices throughout the state.
5. That the utilization of qualified personnel be encouraged by postgraduate university extension and other miscellaneous courses offered to in-

cumbent sheriffs, coroners, public administrators, and other interested groups within the State of California to provide refresher courses and to introduce new techniques.

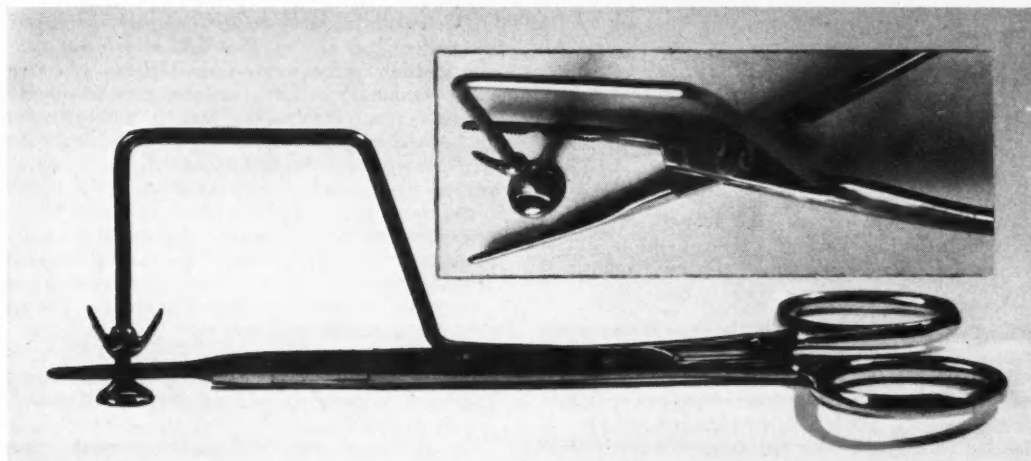
6. That provision be made temporarily for adequately trained personnel to be available for consultation in rural areas where facilities currently do not exist and where minimum budgets preclude the full or part time employment of specialists in the respective fields.

7. That the local option of rural communities be maintained and that the principle of county or home rule continue to be recognized. Within such areas, however, it is suggested that a well balanced and comprehensive campaign of public education be instituted for the dissemination of information regarding the legal background, the social necessities and the proper functions of an office of medicolegal investigation.

San Francisco General Hospital, 22nd Street and Potrero Avenue, San Francisco 10.

A New Circumcision Instrument

ROBERT COHEN, M.D., Bakersfield



THE INSTRUMENT pictured* is designed to make circumcision easier and quicker. The bell shaped dome (which has openings in it to permit the escape of urine) fits over the tip of the glans penis, and the two prongs are used to hold the foreskin forward under tension. Since the blades of the hemostat are notched to fit around the rod on which the bell dome and the prongs are mounted (see inset), they can be clamped together tightly enough to effect hemostasis in the prepuce at the operative site.

In the use of this instrument, the first step is to free any adhesions of the prepuce to the glans, spread the prepuce with forceps, retract it behind the corona, then return it to its original position covering the glans. This done, the hemostatic blades

of the clamp are spread wide, the bell dome is placed on the tip of the glans, and the prepuce is drawn upward with forceps and hooked on the two prongs to hold it in place. If the penis is small, the prepuce need not be drawn taut; but if of average size or larger, more tension must be used in order that after the operation there will be enough retraction to draw the remaining skin back beyond the corona.

With the prepuce held forward on the prongs at the right degree of tension, the hemostat is clamped and the prepuce is cut off with scissors and scalpel flush with the jaw of the hemostat. As soon as clotting occurs, the clamp is opened and the bell dome is gently removed from the glans. If a dressing is needed, gauze impregnated with petroleum jelly is suitable.

2415 Niles Street, Bakersfield.

Submitted February 24, 1960.

*Made to author's specifications. Not generally available.



CASE REPORTS

Cardiac Arrest Occurring Outside the Operating Room

Report of Two Cases

DONALD C. SCHLOTTER, M.D., and
RICHARD W. GENTRY, M.D., Riverside

WITHIN THE LAST THREE YEARS the literature has been sprinkled with accounts of cases in which cardiac arrest occurred in a hospital but outside the operating room and resuscitation brought about total recovery of the patient^{1,2}; but it may be assumed that many unsuccessful attempts have been made. Following are reports of two cases in which this extraordinary procedure was carried out, according to a previously devised plan, at Riverside Community Hospital after arrest had occurred in the emergency room, with the patients completely recovering. In both patients thoracotomy was done and defibrillation, cardiac massage and artificial respiration were carried out. A clinical diagnosis of myocardial infarction was made in each case.

CASE 1. The patient was a 49-year-old Caucasian man who was admitted to the emergency room at 9:25 a.m. on March 17, 1959. About one week and again two days before admission he had had substernal pain for about a half hour. At 8:00 a.m. on the day of admission he had sharp substernal pain radiating to the left elbow. A friend brought him to the emergency room. His blood pressure then was 80/0 mm. of mercury. At 9:35 a.m. while an internist was listening to his heart, arrest occurred. He became unconscious immediately, and blood pressure and pulse were unobtainable. Vigorous pounding on the chest and intracardiac injection of epinephrine (1 cc. 1:1000) did not restore the heartbeat, although respirations continued for two minutes. The emergency alarm was sounded and a surgeon and anesthesiologist arrived on the scene. Within four minutes after arrest was suspected, thoracotomy was done, a tube was placed in the trachea and the anesthesiologist was forcing respirations. The heart was dilated and in asystole. Cardiac massage was begun at a rate of about 60 per minute and after about ten minutes the heart began to fibrillate. Twice it was necessary to shock the heart electri-

cally. First a series of three shocks was given, then, after five minutes, another similar series. About two minutes after the second series, spontaneous cardiac contractions returned at a rate of about 60 per minute. Respirations resumed spontaneously soon after the heartbeat returned, about 20 minutes from the onset of cardiac arrest. After some ten minutes of observation of the regularly beating heart, the lungs were fully expanded and the chest wall was closed.

During the massage it was necessary to restrain the patient and as soon as it seemed safe (at 10:30 a.m.), 15.0 mg. of morphine sulphate was given intravenously. Vasoxyl® (methoxamine in aqueous solution) was given to support the blood pressure, and procaine amide hydrochloride (100 mg.) was also given intravenously. At 11:15 a.m. when the patient was taken to the recovery room, the systolic blood pressure was 78 mm. of mercury and he was conscious and clear mentally. Levarterenol was administered by intravenous drip to maintain the blood pressure at about 100/60 mm. of mercury. Electrocardiographic tracings were made. The patient was taken to his room at 3:30 p.m.

For a day after resuscitation the patient was uncooperative and belligerent, but thereafter he was alert and cooperative, without personality changes or other evidence of brain damage.

On March 20, the third day, pulmonary edema developed. It was relieved by withdrawing 250 cc. of blood. On the fourth day an episode of ventricular tachycardia lasted two hours, then normal sinus rhythm resumed spontaneously.

Full maintenance dosages of digitalis, quinidine and anticoagulants were administered. The patient was discharged April 22, 1959, 36 days after admission, and at last report had returned to work as a plumber.

Electrocardiograms were made from time to time during the hospital stay. Because of the presence of surgical dressings, only the standard leads were used for the first few days. The tracing taken in the recovery room (Figure 1) showed a chaotic rhythm with AV dissociation. There are runs of unifocal ventricular premature contractions and multifocal ventricular premature contractions. The tracings done April 20, two days before dismissal from the hospital (Figures 2 and 3), were characteristic of first degree heart block, right bundle branch block, anteroseptal infarction and posterior infarction.

Presented before the Section on Anesthesiology at the 89th Annual Session of the California Medical Association, Los Angeles, February 21 to 24, 1960.

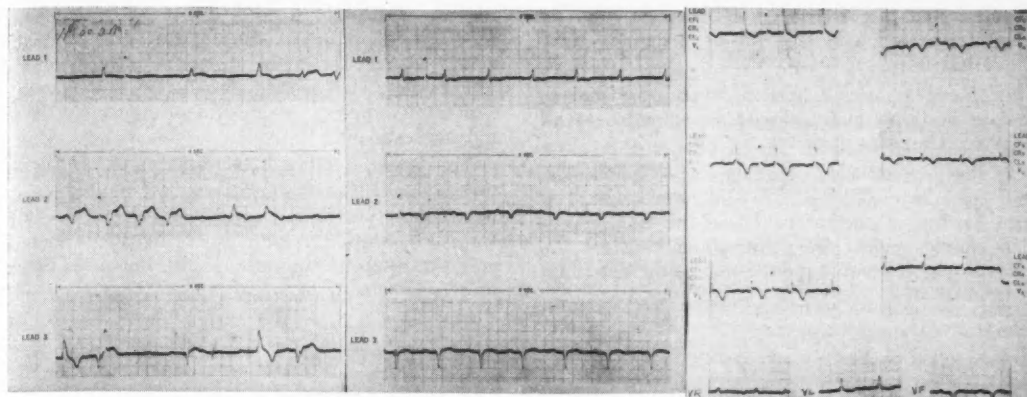


Figure 1 (Case 1).—*Left:* Tracings made in recovery room showing chaotic rhythm with AV dissociation. *Center and right:* Tracings two days before dismissal of patient from hospital, characteristic of first degree heart block, right bundle branch block, anteroseptal infarction and posterior infarction.

CASE 2. The patient was a 56-year-old Caucasian man, a cattle buyer. While driving to work on the morning of May 18, 1959, he had an attack of substernal pain which passed spontaneously, then recurred in a few minutes with increased intensity. He soon became unconscious. A friend placed two nitroglycerin tablets under the patient's tongue and he promptly regained consciousness. He was transported by ambulance to the emergency room of the Riverside Community Hospital where he arrived at 8:50 a.m.

He was examined by an internist who administered morphine sulphate, 15.0 mg., intravenously. An electrocardiogram was consistent with posterior myocardial infarction.

While waiting on a stretcher for transfer to his room, the patient told his wife that he felt numb; he lost consciousness and rapidly became cyanotic. No heart sounds were audible and vigorous pounding on the chest did not restore the beat. The emergency alarm was sounded and in four minutes a surgeon and an anesthesiologist arrived. An incision was made at the fourth left intercostal space, an endotracheal tube was inserted and controlled respiration was started. The time was 9:55 a.m.

The heart was cyanotic and in ventricular fibrillation. Massage at a rate of 60 to 70 per minute was done for eight to ten minutes. Three electrical shocks failed to arrest the fibrillation. Massage was reinstituted. Procaine amide hydrochloride, 100 mg., was injected into the heart. Three further shocks arrested the fibrillation. At 10:25 a.m. another 100 mg. of procaine amide hydrochloride was given intravenously, and at 10:30 a.m. 20 mg. of Vasoxyl® (methoxamine in water) was administered by vein. Shortly thereafter ventricular fibrillation resumed and electrical shock was again applied. Massage was resumed, and slowly the heart began to beat spontaneously. At 10:40 a.m. the rate was 60 and bleeding was observed from the edges of the operative wound. The patient lay flaccidly during the whole procedure. After 20 minutes' ob-

servation, the chest was closed and the patient was moved to the recovery room at 11:20 a.m.

Systolic blood pressure remained at about 100 mm. of mercury for the next two hours. More procaine amide hydrochloride was given intravenously. The patient was moved to his room at 2:30 p.m. The systolic blood pressure having slowly decreased to 80 mm. of mercury, one unit of blood was infused and levarterenol was given by intravenous drip for 36 hours, after which the blood pressure was maintained without medication.

About six hours after the cardiac arrest, the patient had alternate periods of quiet and restlessness. For 22 hours he did not respond to stimuli, but at last he opened his eyes on command. Twenty-four hours later he was completely clear and alert and remained so.

With the exception of one episode of ventricular tachycardia, convalescence was uneventful. Numerous electrocardiographic tracings confirmed the diagnosis of acute posterolateral myocardial infarction.

The patient was maintained on digitalis, quinidine and anticoagulants and was discharged June 8, 1959, 21 days after admission. When last heard from, he was back at work.

Electrocardiographic tracings taken before the cardiac arrest (Figure 2) were interpreted as showing changes suggestive of posterior infarction. Tracings taken later the same day (Figure 3) verified the earlier impression. Figure 4 shows tracings taken four days later during an attack of tachycardia.

COMMENT

By extension, the experience in these two cases would seem to indicate that a few victims of cardiac arrest occurring outside the operating room may be saved, provided the institution is equipped to deal with them and the medical and nursing staff are specifically trained to carry out the procedure. Hospitals in a position to consider coping with occasional cases of cardiac arrest outside the op-

erating room might develop a plan of action by adapting the following suggestions to their peculiar circumstances:

1. *Alarm system.* A system involving visual as well as auditory alarm should be extended to all points in the institution.

2. *Professional team.* Any member of the medical staff may be called upon to diagnose arrest and start cardiac resuscitation. Therefore, each physician should review the subject and consider the indications for resuscitation. Some of the determin-

ing factors should include the time elapsed since the beginning of arrest, existing disease or traumatic condition and facilities and personnel available. The nursing staff should also be trained to recognize cardiac arrest, to report it promptly and be of aid in treatment.

The alarm having been given and treatment started, the original physicians and nurses should continue only until the arrival of a team especially trained in cardiac resuscitation. This should include surgeon, internist, anesthesiologist, nurses and technicians to operate technical equipment.

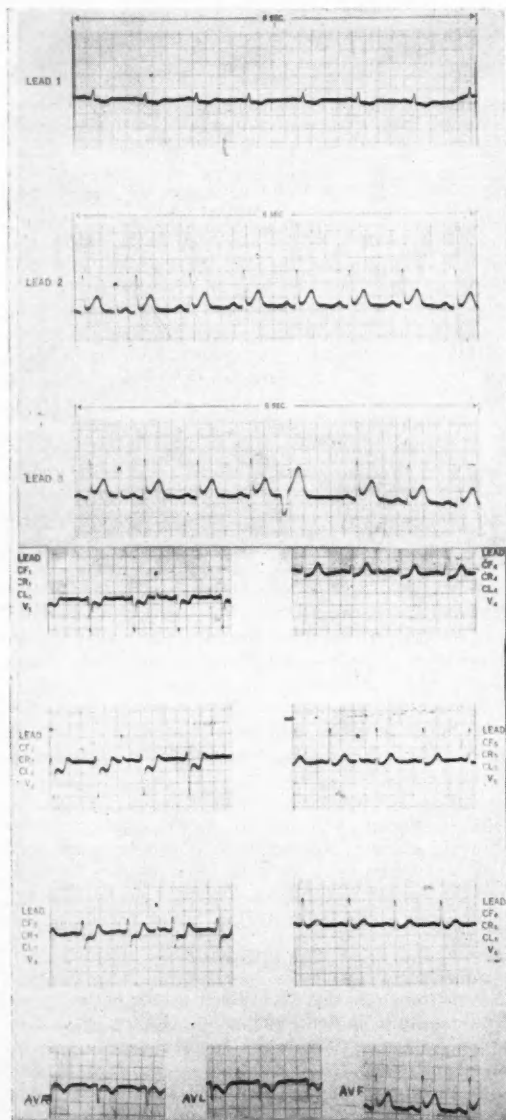


Figure 2.—Tracings (Case 2) taken before cardiac arrest, showing changes suggestive of posterior infarction.

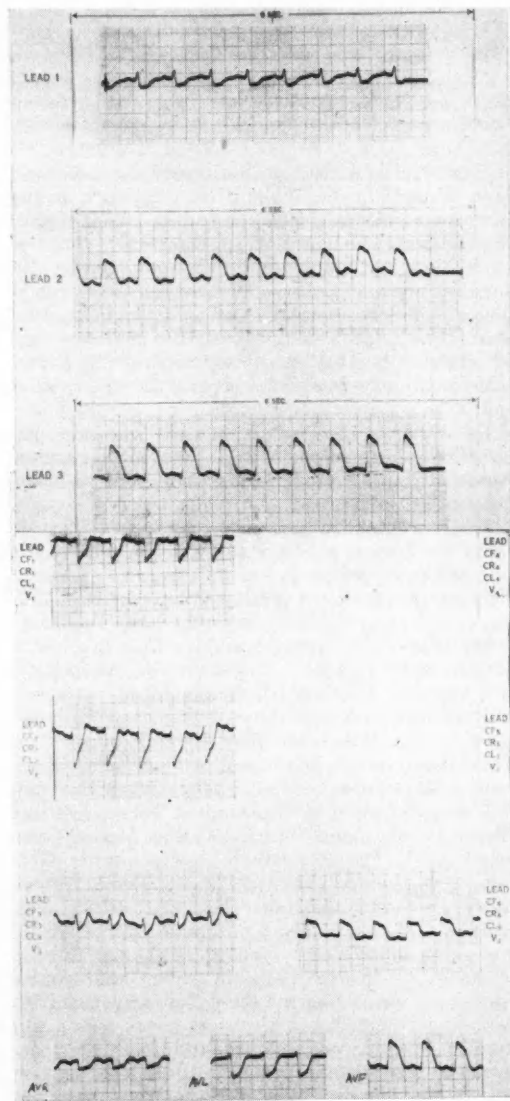


Figure 3.—Tracings made later the same day as Figure 2 verified the earlier impression.

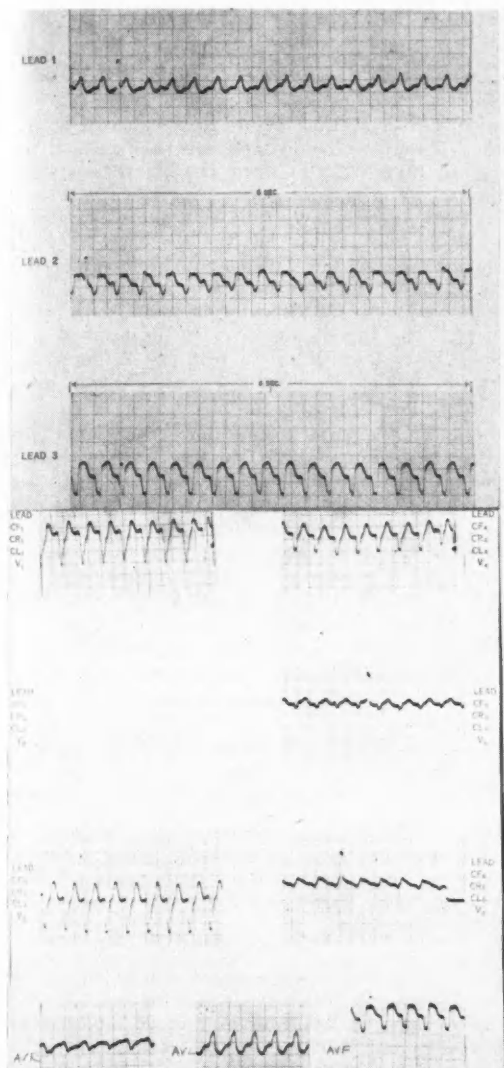


Figure 4.—Tracings made during an attack of tachycardia four days after Figures 2 and 3.

3. *Facilities.* Equipment to begin dealing with the emergency should be located at each nursing station, x-ray department, recovery room, intensive care ward, nursery and emergency room. A sterile scalpel, a stethoscope and portable apparatus for the administration of oxygen under positive pressure should suffice.

Centrally located cardiac emergency equipment may be summoned along with the professional team. This should include surgical instruments and drapes, laryngoscopes and endotracheal tubes, drugs, a cardiac defibrillator and pacemaker and an electrocardiograph.

SUMMARY

In two recent cases of cardiac arrest in the hospital but outside the operating room, an alarm system summoned a well organized team who carried out cardiac massage and related treatment, saving both patients without any demonstrable brain damage. Both patients returned to work.

4025 Brockton Avenue, Riverside (Schlotter).

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A Case of Leptospirosis Ballum In California

RUTH A. BOAK, M.D.,
WILLIAM D. LINSCHOTT, Ph.D., and
RALPH E. BODFISH, M.D., Los Angeles

IN RECENT YEARS leptospirosis has become recognized as a medical and veterinary problem of worldwide importance. A report by the United States Department of Agriculture²¹ estimated that bovine leptospirosis causes an annual loss of over one hundred million dollars to the American livestock industry. Although leptospirosis in man is reported relatively infrequently in the United States, in many parts of the world it is a significant military¹⁷ or occupational¹⁹ hazard. It would be difficult to determine whether the increased number of cases of leptospirosis reported in recent years is due to a rising incidence, to increased awareness of the disease, or to both.

Recognized human leptospirosis has usually been caused by *Leptospira canicola*, *L. icterohaemorrhagiae*, or *L. pomona* in the United States, where the principal reservoirs of infection are dogs, rats and cattle and hogs. The only other serotypes implicated in naturally acquired human leptospirosis in this country have been *L. australis* A (one serologically confirmed case),¹⁸ *L. autumnalis* (sharply localized outbreaks of "Fort Bragg fever" in North Carolina in 1942, 1943 and 1944),⁷ *L. Ballum* (among workers in a single research laboratory),²⁰ *L. bataviae* (one serologically confirmed case),⁶ *L. grippotyphosa* (three serologically confirmed cases),^{1,4} and the *L. pyrogenes* group (one serologically confirmed case).²² Only *L. canicola*, *L. icterohaemorrhagiae*, and *L. pomona* have been reported in California, in man or in animals.

LEPTOSPIROSIS IN CALIFORNIA

Meyer, Eddie and Anderson-Stewart¹⁵ were the first to report leptospirosis in California, in 1938. They found that about one-third of the rats in

Department of Infectious Diseases, School of Medicine, University of California, Los Angeles 24, and Department of Isotopes, Veterans Administration Hospital, Long Beach.
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northern California showed darkfield evidence of leptospirae in their kidneys. Twenty-two cultures of leptospirae isolated from rats in this area were identified as *L. icterohaemorrhagiae*. These investigators also reported serologically confirmed Weil's disease among San Francisco sewer workers, and were the first to report the presence of a serotype other than *L. icterohaemorrhagiae* in the United States. Seven strains of leptospirae which they isolated from jaundiced dogs in northern California were identified as *L. canicola*.

In 1939, Meyer, Eddie and Anderson-Stewart¹⁶ reported that nearly one-fourth of a group of dogs taken at random in Northern California had significant titers of agglutinins for *L. canicola*. In addition, a strain of leptospira isolated from a case of febrile meningitis in a dog-pound worker was proven to be *L. canicola*. In 1941, Greene⁸ noted that about 20 per cent of dogs taken at random in Southern California had serum agglutinins for *L. canicola*.

The *L. pomona* serotype was first isolated in California by DeLay, Howarth and Eddie,³ who found the organism in cattle in 1955. In the same year, Grossman, Levin and O'Neill⁹ reported two serologically confirmed human cases of *L. pomona* meningitis in California. One patient was a pig ranch owner, the other dug trenches in a field where there were many cattle. Howarth¹⁰ recorded positive reactions to *L. pomona* in 11 per cent of 5,619 bovine sera, 18 per cent of 1,216 porcine sera, and 19 per cent of 21 equine sera submitted for help in diagnostic problems by California veterinarians over a period of five years. In addition, 21 per cent of 340 canine sera contained *L. canicola* agglutinins. More recently, the Los Angeles County Livestock Department reported¹¹ that 26 per cent of 163 bovine sera tested were positive for leptospirosis (presumably *L. pomona*) and that *L. canicola* was implicated serologically in an outbreak of gastroenteritis among the animals of a large goat dairy.¹²

The California Public Health Statistical Report for 1957² listed 34 cases of probable leptospirosis in man from 1949 to 1957. The diagnosis in 23 of these cases was based on increasing serological titers, clinical symptoms and epidemiological evidence. Of the 23 cases, five were attributed to *L. icterohaemorrhagiae*, eleven to *L. canicola*, and seven (since 1951) to *L. pomona*. In four the organism was not classified.

Although *L. ballum* has been known to cause human leptospirosis in other parts of the world, it was only recently that Stoenner and Maclean²⁰ reported the first human infections caused by this serotype in the United States. These cases involved eight out of 58 persons in one laboratory who had frequent contact with Swiss albino mice. Many of these mice (80 per cent of the breeding females) were excreting *L. ballum* in their urine. The following is a description of the first case of leptospirosis due to *L. ballum* to be reported in California.

CASE REPORT

The patient was a 57-year-old man, a laboratory assistant who had routinely handled experimental animals including rabbits, guinea pigs, rats and mice. For some time before he became ill he had worked only with mice and rats, and he had frequently been bitten by them. His illness began with headache and malaise, which progressed to migrating myalgia, high fever (104° F.), anorexia, arthralgia in the knees and pain in the legs, chest and back. During the next few days he noted increased severity of these symptoms and the appearance of moderate conjunctivitis, testicular pain and "dark foamy urine." The patient was given an unspecified antibiotic by a physician on the fifth day of illness, and he became afebrile in about a week. The total duration of illness was ten days.

Leptospirosis was not initially considered, but after the patient returned to work it was thought that an examination should be made for Weil's disease because of the history of frequent contact with rats and mice. Blood specimens were taken 23, 59 and 158 days after the onset of illness. The first two specimens were submitted to the Communicable Diseases Center at Atlanta, Georgia, where they were examined by the "agglutination-lysis" test with 11 different leptospiral serotypes. The results were reported as follows:

	Agglutination Lysis Titers			
	<i>L. ballum</i>	<i>L. canicola</i>	<i>L. icterohaemorrhagiae</i>	All Others
23-day specimen	1:512	1:128	1:32	Negative
59 day specimen	1:128	Negative	Negative	Negative

After the final blood specimen was obtained, all three sera were tested simultaneously in our laboratory, and "agglutination-lysis" titers against *L. ballum* of 1:512, 1:256 and 1:128, in chronological order, were found.

DISCUSSION

The cases of leptospirosis *ballum* reported by Stoenner and Maclean²⁰ were characterized by headache, fever (104-105° F.), weakness, chills and sweats and various manifestations of myalgia. These investigators were the first to associate orchitis with leptospirosis; they found this symptom in each of the four clinical cases they reported in detail. In their series, orchitis appeared two to four weeks after onset, as compared with five days in the present case. They reported no conjunctivitis, which however, is quite commonly associated with human leptospirosis.

A complicating factor in the present report is the fact that the patient had had testicular pain six years previously, in Korea. After it subsided, a scrotal mass was discovered, which is still present.

It is still fairly common practice to include only the three major serotypes in screening sera for leptospirosis in this country; in veterinary medicine, often only *L. pomona* is used. However, several sur-

veys recently have shown that additional serotypes are endemic among wild animals in certain areas in the southern and eastern United States. The following serotypes have been cultured from such animals as mice, raccoons, opossums, foxes, skunks and wild-cats: *L. australis*,^{5,13} *L. autumnalis*,¹⁴ *L. ballum*,¹³ *L. grippotyphosa*,¹³ *L. pomona*,¹³ the *L. hebdomadis* group,¹³ and the *L. mitis*-*L. hyos* group.^{5,13} Until routine testing can be done for all the serotypes that have been implicated in leptospirosis in this country, the true incidence will not be known.

Although the maximum titer to *L. ballum* found in the case reported herein is not high, the declining titer and the clinical history combine to make plausible the assumption that the illness was caused by this serotype of leptospira. The possibility remains that the actual serotype may have been a new or unexpected one related to *L. ballum*, and that the titers observed were owing to cross-reactions.

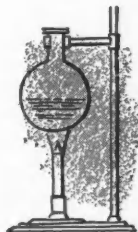
SUMMARY

A laboratory assistant who routinely handled rats, mice, rabbits and guinea pigs became ill with symptoms which were similar to those often reported in mild leptospirosis. The serologic evidence and the clinical history are compatible with a retrospective diagnosis of leptospirosis due to infection with *Leptospira ballum*. This is the first reported evidence for the presence of the *L. ballum* serotype in California.

Department of Infectious Diseases, UCLA Medical Center, Los Angeles 24 (Boak).

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California MEDICINE

For information on preparation of manuscript, see advertising page 2

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EDITORIAL

Medical Television

FOR MANY YEARS all mass media in the United States have found the practice of medicine and its effect on people an attention-getter. Newspapers, magazines, comic strips, radio, motion pictures and, more recently, television, have seized on this topic as a means of building up an audience. Everybody, it seems, is interested in health, either his own or someone's else.

Rex Morgan, M.D., Doctor Kildare and other fictional physicians have practiced on newspaper pages or on radio for many years. Their colleagues are legion in other mass media, including some reprobates who cast dishonor on the profession but frequently enhance the entertainment value of a story or play. One is reminded of the only doctor in the frontier town in television's potboiling western films. He is either a saint who will attend a horse or a dog between calls on real people or a scoundrel who was drummed out of practice in "the east" and settled in a drunken stupor in a town so remote from civilization that he hopes to escape his less than laudable past.

It is noteworthy that all fictional physicians, be they "good guys" or "bad guys," are somehow set apart both by authors and by auditors as someone a little special. The title *doctor*, even when its holder disgraces it, automatically seems to mean an educated and responsible person, worthy of notice.

This implied respect is today alluded to in nostalgic remembrance of the old family doctor with his faithful horse and sagging buggy. Public awareness that both the doctor and his equipage have kept pace with the total developments of the Twentieth Century is sometimes lacking. Along with this loss of recognition has come a belittling in some quarters of the high position today's doctor actually maintains in preserving and bettering the health status of people.

Granted today's highly trained physician does not often sit chin-in-hand pondering through the night over a sick patient. The fact is that he doesn't need to go through this pious procedure; with his 1960 knowledge he has been able to diagnose and to prescribe therapy and can devote his time to other patients instead of puzzling for hours over what ails the sole patient in the classic picture.

What the public is prone to forget is that the doctor who eschews the bedside chair is not displaying a lack of interest or of integrity; he is simply devoting his training and skill to more patients, all of them with a much better prospect of recovery than their forebears had at the turn of the century.

This is one of the aspects which caused the California Medical Association last winter to vote for an augmented program of public relations. The program was planned around the problem of acquainting the public with today's physician, with his training, his skills and, above all, his limitations.

Nobody knows better than physicians that the practice of medicine is not an exact science. It has limitations, fortunately fewer each year, which may be obscured in the super-scientific hopes of today.

If a public relations program can succeed in portraying today's physician exactly as he is, that program will be a success. While it may in good conscience stress the physician's strong points, at the same time it must point out those areas where exactness and certainty may not reasonably be expected.

Current plans for the C.M.A. program encompass a series of television programs, each devoted to a single disease entity which is widely known to people and on which up-to-date knowledge may be explained to a mass audience. These programs would appear as public service programs on television stations throughout the state.

Each program would be accompanied by a "live" presentation by several local physicians who would discuss the topic of the program, the impact of the

particular disease on the local community and the resources available for handling the problem right at home.

In addition, the plan would take in two programs that would stress the more dramatic aspects of medical or surgical practice, such as cardiac operations, corneal transplants, aorta grafts and other procedures in which California viewers have shown intense interest in recent years.

To carry out this program, local cooperation will be vital. Local medical societies will be called upon to supply qualified discussants for the "live" portions of the programs. They will be asked to confer with local station operators for assignment of time. They will preview the TV films, plan their discussion procedures. They will even direct the attention of their patients to these public educational programs, even in competition with westerns and mysteries.

The Council of the California Medical Association is now engaged in previewing the pilot programs in this series and in conferring with physicians and technical consultants in order to produce the best and most technically accurate films that can be achieved.

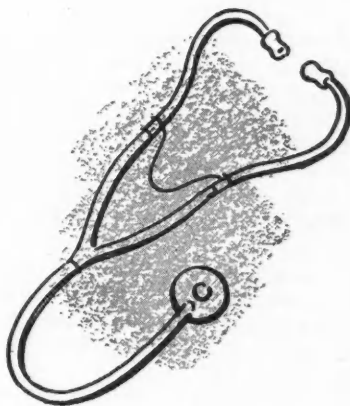
The Council has asked all county medical soci-

eties in areas where TV stations exist to make preparations for this series and to participate in it. Specifically, it has asked that these societies name committees of interested and willing members who can attend to the local aspects of the statewide plans.

With the cooperation of the local societies the C.M.A. hopes to produce a series of TV presentations which will attract audiences throughout the state. If these programs can present to the public the physician of today as he really is, and can take the people into the confidence of the profession by open discussions over the air waves, much good will be done for the public and the profession alike.

If the traditions of the medical profession, the devotion to the care of the individual patient, the individual and personal attention of the physician and the placing of the patient's health above all other considerations can be portrayed, this program will be outstanding.

In the final analysis, such a program will represent one more example of the profession's use of a new tool—electronics—for better care and service to its patients. The opportunity should be used to the fullest.



California MEDICAL ASSOCIATION

NOTICES & REPORTS

Council Meeting Minutes

Minutes of the 461st Meeting of the Council, Los Angeles, Ambassador Hotel, July 9, 1960.

The meeting was called to order by Chairman Sherman in the Ambassador Hotel, Los Angeles, on Saturday, July 9, 1960, at 9:30 a.m.

Roll Call:

Present were President Foster, Speaker Doyle, Vice-Speaker Heron, Secretary Hosmer, Editor Wilbur and Councilors Wheeler, Todd, Quinn, O'Neill, Kirchner, O'Connor, Shaw, Gifford, Davis, Miller, Sherman, Campbell, Morrison, Anderson and Teall.

Absent for cause were: President-Elect Bostick, Councilors MacLaggan, Rogers and Murray.

Present by invitation were: Doctors Batchelder and Miller and Messrs. Thomas, Clancy, Collins, Marvin, Whelan and Tobitt; Mr. Hassard of legal counsel; county executives Scheuber of Alameda-Contra Costa, Geisert of Kern, Field of Los Angeles, Grove of Monterey, Bannister of Orange, Brayer of Riverside, Dochterman of Sacramento, Donmyer of San Bernardino, Nute of San Diego, Neick of San Francisco, Thompson of Stockton, Wood of San Mateo, Donovan of Santa Clara, Dermott of Sonoma and Bailey of Tulare; Messrs. Paolini and Lyon of California Physicians' Service; Dr. Malcolm Merrill, State Director of Public Health; Dr. Daniel Blain, State Director, Mental Hygiene; Mrs. Eunice Evans of the State Department of Social Welfare; Mr. Cecil Dickson, Legislative Representative of the A.M.A., Washington, D. C.; Doctors T. Eric Reynolds, Stuart Knox, Donald Harrington, Robert Gentry, Werner Hoyt, Donald Abbott, John Schaupp and others.

1. Minutes for Approval:

On motion duly made and seconded, the minutes of the 460th meeting of the council, held June 4, 1960, were approved.

2. Membership:

(a) A report of membership as of July 7, 1960, was presented and ordered filed.

(b) On motion duly made and seconded, 556 delinquent members whose dues have been received, were voted reinstatement.

(c) On motion duly made and seconded, one applicant was voted Retired Membership. This was Royal Scudder, Mendocino-Lake County.

(d) On motion duly made and seconded in each instance, 11 applicants were voted Associate Membership. These were: John W. Brown, Alameda-Contra Costa County; Oscar J. Balchum, Lemuel J. Haywood, Earl William Kendrick, Robert L. Peters, Los Angeles County; William H. Lyon, Jr., Marin County; George William Stevenson, Orange County; Clyde Carroll Jones, San Diego County; Erwin C. Sage, Louise van der Reis, San Francisco County; and Clarice H. Haylett, San Mateo County.

(e) On motion duly made and seconded in each instance, reductions of dues were voted for four members for reasons of prolonged illness or post-graduate study.

3. Report of Officers:

President Foster discussed the recent meeting of the A.M.A. House of Delegates and presented the

PAUL D. FOSTER, M.D.	President
WARREN L. BOSTICK, M.D.	President-Elect
JAMES C. DOYLE, M.D.	Speaker
IVAN C. HERON, M.D.	Vice-Speaker
SAMUEL R. SHERMAN, M.D. . . .	Chairman of the Council
RALPH C. TEALL, M.D.	Vice-Chairman of the Council
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POLIOMYELITIS

*A Resolution Adopted by the Council of the California Medical Association**

WHEREAS, in the five years that the Salk poliomyelitis vaccine has been used, at least 500 persons in California have been saved from death and another 7,500 have been spared the crippling after-effects of paralytic poliomyelitis, and

WHEREAS, the record would be even better if more people would obtain the immunizations, and

WHEREAS, the Salk vaccine has proved to be extraordinarily effective, four inoculations reducing by more than 90 per cent a person's risk of being paralyzed or killed by poliomyelitis, and

WHEREAS, 40 per cent of the population now has maximum protection against poliomyelitis, 11 per cent have been partially vaccinated with one or two injections, but 49 per cent, or 4,400,000 persons in California, under age 40, have had no vaccine at all, and

WHEREAS, poliomyelitis strikes at all age groups and more than 400 paralytic cases were reported in California in 1959, a 76 per cent increase over 1958, and

WHEREAS, if the pattern of recent years is repeated poliomyelitis will aim its most vicious blows at the 741,700 California children under the age of five years who have had fewer than four immunizations, and

WHEREAS, the Salk vaccine will for some time be the only widely available immunizing agent against poliomyelitis, and

*Initially approved by the C.M.A. Committee on State Medical Services

WHEREAS, many county medical societies in California have sponsored excellent poliomyelitis immunization programs in their communities in the past few years, and

WHEREAS, strong medical leadership is needed to inspire confidence and encourage family participation in the vaccination program, and

WHEREAS, such programs can constitute one of the profession's finest public service opportunities; now, therefore, be it

Resolved: That the Council of the California Medical Association strongly urges that every California physician assume responsibility for making certain, whenever possible, that all members of families he serves receive protection against poliomyelitis by having the full course of Salk vaccine; and be it further

Resolved: That the Council of California Medical Association highly commends county medical societies for the exercise of community leadership in the poliomyelitis vaccination program and urges that all county societies meet with county and local health department representatives to create study committees to survey the problem of immunization as it may exist in the local areas, and to develop and implement a satisfactory program, using all reasonable measures, to afford the widest possible protection from utilization of Salk vaccine in the community and to assure that no Californian need be subject to needless risk of paralytic poliomyelitis.

program of the Michigan Association of Professions for consideration. On motion duly made and seconded, it was voted to refer this item to the Commission on Public Policy for study and report back to the Council with recommendations.

A letter from Dr. Askey thanking the officers and members of the Council for the reception given in his honor was read. On motion duly made and seconded, it was voted to reply to Dr. Askey's letter on behalf of the Council, all members of the Council to sign the letter.

4. *Financial:*

Chairman Heron presented a report on the current cash balances of the Association, which was ordered filed. Dr. Heron reported on the request of the Committee on Postgraduate Activities for an addition of \$800 to its budget to reinstitute a circuit course in the Redding area. On motion duly made and seconded, it was voted to approve this request.

5. *Committee on Committees:*

Council Chairman Sherman reported on the recommendations of the Committee on Committees that

Francis J. Cox, M.D., of San Francisco be appointed to the Bureau of Research and Planning to replace John M. Rumsey, M.D., of San Diego, resigned. On motion duly made and seconded, this recommendation was approved.

6. *Bureau of Research and Planning:*

Chairman Hoyt presented a progress report outlining the areas of study to be undertaken by the bureau. The bureau is continuing with its study of the role of government in the purchase of medical services.

7. *Commission on Medical Services:*

Chairman Harrington reported that House of Delegates resolutions referred to the Commission and its committees are under study. He suggested the need for a progressive and continuous study of hospital relations, which was referred to the staff for study.

(a) *Liaison Committee to State Department of Social Welfare:* Chairman Quinn informed the Council of the consideration being given by the Department of Social Welfare to the pilot program on

health evaluation examinations of Welfare recipients. Dr. Quinn reported that the public assistance medical care program is operating in the black. Discussion was held on the desire to experiment on a broader basis than the Glenn County study, in an effort to provide prepaid medical care to OAS recipients. On motion duly made and seconded, it was voted to direct the Liaison Committee to pursue this with the State Department of Social Welfare, working in cooperation with the California Physicians' Service and the Commission on Medical Services. Any county to be selected for such an experimental program would be determined in cooperation with the Department of Social Welfare, C.P.S. and the county societies.

(b) *Committee on Aging*: Walter Batchelder, M.D., reported that the first meeting of the 100-man Steering Committee to develop a format for the Governor's Conference on Aging had been held. Ten divisions have been established, one on health problems of the aged. Dr. Batchelder, Mr. Sloate of the State Department of Social Welfare, Dr. Breslow and Mr. Murphy of the Public Health Department will act as staff for the health division and serve as liaison between the State Department, C.M.A. and the Steering Committee. The Committee on Aging will meet with the physicians on the Steering Committee at an early date.

(c) *Liaison Committee to California Physicians' Service*: The Interim report of the C.M.S.-C.P.S. Liaison Committee was presented by Dr. Donald Harrington. On motion duly made and seconded, it was voted to refer this report to an Ad Hoc Committee composed of Doctors Quinn, chairman, O'Neill, Wilbur, Miller and Gifford to review the recommendations and report back in the afternoon session. Following the report of the Ad Hoc Committee, on motion duly made and seconded in each instance, the Council took the following action:

1. That C.P.S. should be prepared to advance and grow in the field of prepaid medical care and to continue to cooperate with federal and state agencies;

2. That C.P.S. continue the service concept adjusted to varying incomes and fee schedules and continue to offer programs of other types;

3. That C.P.S. in its attempts to meet consumer demands not be limited in its marketing approach by regional or county programs but be able to make available all contracts on a statewide basis: Doctors O'Connor, Teal, Wheeler, Kirchner and Gifford voted in the negative and were so recorded.

4. Reaffirmed the 1954 policy of the Council outlining the method by which changes in C.P.S. fee schedules should be made (the Committee on Fees

to the Commission on Medical Services to the Council to the Board of Trustees);

5. That the Liaison Committee to C.P.S. be granted the authority to poll the members of the C.M.A. or the participating physicians of C.P.S. at the request of the Board of Trustees and the C.M.A. Council or to poll the members of a county medical society at the society's request.

On motion duly made and seconded, the report of the Liaison Committee was approved as amended and modified.

8. *Commission on Public Agencies*:

(a) *Committee on State Medical Services*: Chairman Omer Wheeler presented a resolution concerning poliomyelitis, which on motion duly made and seconded, was approved. (See text on page 169.)

Dr. Wheeler also reported on the discussions by the committee on the 1956 House of Delegates resolution dealing with narcotic addiction. The committee is in agreement that addiction has medical implications, that the profession should assume leadership, in part, in the control of the spread of addiction. On motion duly made and seconded, it was voted to approve establishment of a committee on dangerous drugs under the Commission on Public Agencies to pursue this matter and act in a liaison capacity to any state agency interested in this problem. On motion duly made and seconded, the matter of appointments to this subcommittee was referred to the Committee on Committees.

(b) *Committee on Mental Health*: Chairman Knox reported on the growing use of hypnosis. On motion duly made and seconded, it was voted that for the purpose of Medicare and other prepaid state or federal programs, hypnosis be considered a component of therapy, not a separate procedure, and that no charge should be made for hypnotic treatment per se, only for the general therapy.

9. *Commission on Public Policy*:

Committee on Public Relations: Dr. John Schaupp, chairman of the subcommittee on Radio, Television and Motion Pictures, reviewed the approach being taken by the subcommittee in presenting a true image of the profession to the public with the interwoven messages of medicine to be presented in good taste and in a delicate fashion. On motion duly made and seconded, the approach being taken by this subcommittee was approved.

Dr. Schaupp recommended that each county medical society form its own committee or designate an existing committee to work on a local level in cooperation with the C.M.A. committee, if a county society desires to do so. On motion duly made and

seconded, it was voted to approve this recommendation and to send a letter to each society requesting implementation of the recommendation and that the societies discuss this with their councilor and assigned C.M.A. staff member.

Mr. Clancy discussed the concept of establishing a medical student scholarship fund. On motion duly made and seconded, it was voted to refer this matter to the Commission on Medical Education for study and report back to the Council, if possible a preliminary report to be presented at the next meeting.

10. *Commission on Cancer:*

Chairman Davis reported that the committees of the Commission on Cancer had delineated their areas of responsibility and activity. He also reported that the Committee on Cancer Education is investigating the cost of revising the C.M.A. Cancer Studies and that the Committee on Tumor Tissue Registry is reviewing the administrative procedures of the registry. The Committee on Consultative Tumor Boards has recommended that an annual roster of approved tumor boards within the state be prepared and given to each county medical society. On motion duly made and seconded, the committee was authorized to proceed in this regard.

11. *Staff Report:*

Mr. Hassard introduced Mr. William Tobitt, a new addition to the staff. Mr. Tobitt will be working primarily in the field of radio, television and motion pictures and will also assist the staff in preparing written materials.

12. *Report of Affiliated Organizations and Invited Guests:*

(a) *Department of Public Health:* Dr. Malcolm Merrill reported on the polio incidence in California, stating that it was higher this summer than last summer. He also reported that the live virus had not been licensed for use in this country at this time, and there was no information on when it might be available. He also reported on the formation of an Interagency Council on Tuberculosis Control, to urge all interested agencies and organizations to do more in the field of tuberculosis.

Dr. Merrill reported on the court action of the Humane Society of the United States vs. the State Department of Public Health, wherein the court dismissed the case against the department for its handling of the College of Medical Evangelists' use of animals for research purposes. He advised that this matter would probably be taken to the higher courts. He further reported to the Council on the

formation of a technical and policy advisory committee to assist the department in its study of chemical residue on food products. Dr. Ralph Teall has been appointed to serve on this committee.

(b) *State Department of Social Welfare:* Mrs. Eunice Evans, deputy director of the State Department of Social Welfare, reported that the staff work and coordination for the Governor's Conference on Aging has been assigned to the department. She further reported that a new approach is being taken by the department, wherein more emphasis will be placed on service; this will involve close cooperation with the medical profession.

(c) *State Department of Mental Hygiene:* Dr. Daniel Blain was invited to present a detailed report on the program of his Department at the next meeting of the Council.

(d) *California Physicians' Service:* Dr. Ivan Heron reported that C.P.S. was experimenting with a program of unit deductibles for out-patient services and that the board has authorized the sale of 5,000 contracts to test the market acceptance and experience of this new concept. He also reported that the board and its committees are formulating plans to promote concepts imposed in House of Delegates resolutions, and that the board has approved the recommendation that relative value procedure 029 or its A and B Schedule equivalent be paid without calling for a medical report from the attending physician.

The total membership of C.P.S. as of June 30, 1960, was 788,194, representing a net increase of 5,000 during the past two months. For the 12-month period ending May 31, 1960, C.P.S. had an operating income in its commercial program of slightly over forty million dollars and in addition had an investment income of close to \$600,000. During that fiscal year two and one-half million dollars were placed in the stabilization reserve as compared to one million nine hundred thousand dollars during the preceding 12-month period. Net administrative expenses are continuing to decline.

13. *Annual Conference of County Society Officers:*

Chairman Sherman appointed an Ad Hoc Committee composed of Doctors Todd, Murray, Gifford, Miller, Anderson and Morrison to develop recommendations for the format for the conference and the time when it will be held, to report at the next meeting of the Council.

14. *C.M.A. Mailing List:*

A request from the Presbyterian Medical Center of San Francisco regarding use of the mailing list

to announce the operation of the center was presented. On motion duly made and seconded, it was voted to grant approval to the Presbyterian Medical Center to use the mailing list for this purpose, all costs to be paid by the center.

15. *New Business:*

(It was announced that Dr. John Murray had recently undergone surgery and that Mrs. Arthur Kirchner was currently in the hospital. On motion

duly made and seconded, it was voted to send the regards of the Council to each.)

Executive Session.

Adjournment:

There being no further business to come before the Council, the meeting was adjourned at 5:00 p.m.

SAMUEL R. SHERMAN, M.D., *Chairman*

MATTHEW N. HOSMER, M.D., *Secretary*

In Memoriam

BOWER, ALBERT GORDON. Died in Pasadena, August 2, 1960, aged 70. Graduate of Rush Medical College, Chicago, 1916. Licensed in California in 1920. Doctor Bower was a member of the Los Angeles County Medical Association, a life member of the California Medical Association, and a member of the American Medical Association.

COLLINS, CLINTON DARWIN. Died in Carmel, July 24, 1960, aged 75. Graduate of Cooper Medical College, San Francisco, 1911. Licensed in California in 1911. Doctor Collins was a member of the Fresno County Medical Society.

DE LORIMER, ALFRED A. Died in San Francisco, July 19, 1960, aged 58. Graduate of the University of California School of Medicine, Berkeley-San Francisco, 1927. Licensed in California in 1927. Doctor De Lorimer was a member of the San Francisco Medical Society.

FRIEDBERG, IRWIN W. Died July 2, 1960, aged 59. Graduate of New York University College of Medicine, New York, 1924. Licensed in California in 1928. Doctor Friedberg was a member of the Los Angeles County Medical Association.

GRAUN, RICHARD E. Died July 22, 1960, aged 66. Graduate of Stanford University School of Medicine, Stanford-San Francisco, 1930. Licensed in California in 1930. Doctor Graun was a member of the Siskiyou County Medical Society.

HUSTON, JAMES MALLERNEE. Died July 15, 1960, aged 66. Graduate of University of Cincinnati College of Medicine, Ohio, 1921. Licensed in California in 1922. Doctor Huston was a member of the Los Angeles County Medical Association.

IRIKI, WALTER KELSUKE. Died in Berkeley, July 25, 1960, aged 57. Graduate of Stanford University School of Medi-

cine, Stanford-San Francisco, 1932. Licensed in California in 1932. Doctor Iriki was a member of the Alameda-Contra Costa Medical Association.

LOWE, EUGENE L. Died June 22, 1960, aged 57. Graduate of Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin, Prussia, Germany, 1928. Licensed in California in 1942. Doctor Lowe was a member of the Los Angeles County Medical Association.

LUNDEGAARD, ELLERT EMANUEL. Died in Santa Barbara, July 14, 1960, aged 65. Graduate of Northwestern University Medical School, Chicago, Illinois, 1930. Licensed in California in 1930. Doctor Lundegaard was an associate member of the Ventura County Medical Society.

PFUFF, EARL K. Died in Loma Linda, June 27, 1960, aged 80. Graduate of Indiana Medical College, School of Medicine of Purdue University, Indianapolis, 1906. Licensed in California in 1923. Doctor Pfaff was a retired member of the Los Angeles County Medical Association and the California Medical Association, and an associate member of the American Medical Association.

SIMMONS, EDWARD LINCOLN. Died May 27, 1960, aged 45, of cardiac failure. Graduate of the University of Southern California School of Medicine, Los Angeles, 1949. Licensed in California in 1949. Doctor Simmons was a member of the Santa Clara County Medical Society.

TOURTILLOTT, WALTER W. Died in Yountville, July 5, 1960, aged 88. Graduate of Cooper Medical College, San Francisco, 1904. Licensed in California in 1905. Doctor Tourtillott was a retired member of the Tulare County Medical Society and the California Medical Association, and an associate member of the American Medical Association.

CALIFORNIA MEDICAL ASSOCIATION

Annual Meeting

Ambassador Hotel
LOS ANGELES

April 30 to May 3, 1961

Papers for Presentation

If you have a paper that you would like to have considered for presentation, it should be submitted to the appropriate section secretary (see list on this page) no later than November 15, 1960.

Scientific Exhibits

Space is available for scientific exhibits. If you would like to present an exhibit, please write immediately to the office of the California Medical Association, 693 Sutter Street, San Francisco 2, for application forms. To be given consideration by the Committee on Scientific Work, the forms, completely filled out, must be in the office of the California Medical Association no later than November 15, 1960. (No exhibit shown in 1960, and no individual who had an exhibit at the 1960 session, will be eligible until 1962.)

Medical Motion Pictures

The daytime Film Symposiums which proved so popular during the 1959 and 1960 sessions will be continued in 1961. Evening film programs will be planned for doctors, their wives, nurses and ancillary personnel.

Authors desiring to show films should send their applications to Paul D. Foster, M.D., California Medical Association, 2975 Wilshire Blvd., Los Angeles 5. All authors are urged to be present at the time of showing as there will be time allotted for discussion and questions from the audience after each film.

Deadline: December 1, 1960.

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- RADIOLOGY** John R. Bryan
450 Sutter Street, San Francisco 8
- UROLOGY** Sam Peck
233 A Street, San Diego 1

PUBLIC HEALTH REPORT

MALCOLM H. MERRILL, M.D., M.P.H.
Director, State Department of Public Health

NUMEROUS INCIDENTS of Salmonella food poisoning outbreaks are on record but it has frequently proved difficult to trace the source of infection. An unusual outbreak due to *S. reading* occurred in the United States in 1956-57. This organism, rarely found before in this country, was suddenly isolated from cases of Salmonella infections in widely separated areas.

A similar picture seems to be appearing now in California, and possibly the United States, with *S. infantis*. The Microbiology Laboratory in Berkeley has been identifying Salmonella cultures by antigenic analysis since 1943. In California *S. infantis* had not been identified before 1954 in man, nor before 1951 in animals.

Human infections identified in 1955 numbered 22, the number increasing each year until 1960, when 116 cases of *S. infantis* were identified by the laboratory through July 8. *S. infantis* has been identified in cultures from 15 counties so far this year, with 40 cases from Los Angeles County, 28 from Alameda County and 13 from San Francisco.

Sixty-five public health specialists participated in observation training programs in the department during the fiscal year 1959-60. They represented 28 countries, including Afghanistan, Argentina, Australia, China, Japan, Pakistan, Peru, Singapore, South Viet-Nam, Uruguay, West Indies, and Yugoslavia.

An outbreak of phosdrin insecticide poisoning occurred among workers engaged in aerial crop spraying operations near Bakersfield in June and July.

More than 15 patients were put in hospital and at least twice that many were treated as out-patients for phosdrin poisoning.

Phosdrin is a potent liquid organophosphorous insecticide with a physiological action similar to that of parathion. It is extremely poisonous to animals and man, particularly when absorbed through the skin by contact or through the lungs by inhalation.

Experience has shown that strict observance of specific precautions and safety measures for handling phosdrin is absolutely necessary if the hazard is to be reduced to a minimum.

Investigations by a physician and an engineer from the department's Bureau of Occupational Health, in cooperation with engineers from the Division of Industrial Relations, clearly demonstrated that inadequate observance of such precautions was the primary cause of the outbreak.

At the request of the State Board of Public Health the department will include in its 1961-62 budget a request for funds to finance the beginnings of a traffic accident prevention program in the department.

Injuries from traffic accidents are among the major health problems, and are the leading cause of death among Californians age 15 to 34 years.

The proposed program, which would engage a physician, engineer, behavioral scientist, statistician and health educator, would seek the basic causes of accidents, a fundamental need in the field of traffic safety. Without this information a scientific approach cannot be made toward accident prevention. The epidemiological research techniques so successful in hunting down and leading to the control of communicable disease can be applied to the study of accidents.

The department would work with the medical profession and with local health departments in a review of medical standards for drivers, and in a review of standards for emergency care and transportation of persons injured in traffic.



WOMAN'S AUXILIARY

TO THE CALIFORNIA MEDICAL ASSOCIATION

A RECENT CONFERENCE on Health Careers conducted by the San Diego County Medical Auxiliary was so intriguing, progressive and rewarding that to report upon it is a privilege. I do so, not alone for its impressive content, but also because it points up the aggressive actions that a component auxiliary of the state is taking, and because it may well serve as a pattern for similar projects throughout the state.

The purpose of the Health Careers Committee (formerly Nurse Recruitment Committee) is to acquaint school and employment councilors, parents, the community at large and, above all, the young people, with the sweep and challenge of career opportunities in the entire health field. The great need for paramedical personnel—dietitians, physiotherapists, medico-social workers and x-ray technicians, to mention but a few—is all too apparent. The Health Career program provides the medium through which the total pool of health manpower can be enlarged.

A major objective of this program should be the introduction of highly motivated young people into the possibilities of service of this type to their fellow men. By means of this enlarged project, the health leadership of the country is calling on new allies, is creating new tools and is building a new base for community action to enlarge the pool of health workers.

The San Diego County Auxiliary is the first in California, so far as I know, to promote a Health Career Conference. I should like to give you a capsule report of this conference.

Initially, the cooperation and support of the counselling departments of the high schools—public, private and parochial—in the city and county, were obtained. A hospital administrator was chosen to speak on the need for trained personnel, relationship of various jobs in the health field to one another, and the rewards of health careers. Exhibits depicting some of the health careers were presented. These exhibits were staffed by personnel in their chosen fields who presented demonstrations of procedures, materials and instruments employed in their work. Informative brochures covering such

questions as qualifications, educational requirements, salaries and scholarships were made available. In addition, films on the different health careers were shown. Following the film showing, the students were given practical demonstrations in hospitals and laboratories. In order to make the demonstrations as useful as possible, information outlining the various types of careers, was mailed to the students before the conference. Then, by means of a questionnaire the students were assigned to the facilities that most interested them.

The success of the conference was, in a large measure, due to the cooperation of all the many and varied exhibitors who represented nearly all aspects of medicine. Among the participants were the San Diego Dental Laboratory Association, San Diego Hospital Council, California League of Nursing, San Diego Dietetics Association, to mention but a few. The exhibits included a nursing booth demonstrating a late model incubator unit; an x-ray machine and view boxes and films together with an operational anode tube; speech and occupational therapy units demonstrating the aids employed to assist in training the handicapped; laboratory technologists demonstrating the preparation of tissues and bacteriological procedures.

It was the impression of the Auxiliary that the students' enthusiasm for the tours was owing in large part to the fact that the groups were small and were guided by hospital personnel who were prepared to answer questions.

The importance of this project is emphasized by the fact that 57 students requested appointments for revisits. These students spent a day at the school of nursing, laboratories and pharmacies. In addition, those who manifested an interest in medicine as a career were invited to spend a day with the interns at the hospitals.

The practical aspects of this program will be determined by a five-year survey conducted by the school systems to find out what fields the students who attended the conference finally enter.

The San Diego Auxiliary is to be commended. It is programs of this type—progressive, aggressive, thorough and stimulating—that best perform some of the public services in which the auxiliaries have a keen interest.

MRS. SAMUEL GENDEL
*President, Woman's Auxiliary to the
California Medical Association*

INFORMATION

Poliomyelitis

SOME FACTS concerning the state and nationwide 1960 campaign for immunization.*

The California Situation

There were 408 cases of paralytic poliomyelitis in California in 1959 and 20 deaths. Two-thirds of the patients had disabling residual paralysis. (Table 1 shows trend data for 1950-1959). The overall attack rate was 2.7 per 100,000 population. This varied decidedly, however, in different population groups, the attack rate in unvaccinated children, ages 1 to 5 years, having been 45.0 per 100,000 population.

Although the largest number of cases occurred in the 1 to 5 year olds a significant number of cases occurred in all age groups from 1 to 60.

The 408 cases and the 2.7 attack rate in 1959 compare with 232 and 1.6 respectively in 1958.

Since March 1959 ten communities in California have completed poliomyelitis immunization surveys under the direction of local health departments to obtain factual data concerning the immunization status of the population. Consultative and staff assistance in the conduct of such surveys is provided by the California State Department of Public Health. More are planned. A training course on procedures and techniques for immunization surveys was held in Berkeley, May 23 to 27, 1960, under the auspices of the California State Department of Public Health with the teaching staff provided by the Communicable Disease Center of the Public Health Service in Atlanta, Georgia. Eighteen trainees from health departments in California, Oregon and Arizona were in attendance.

The immunization surveys completed thus far have shown that the least protected segments of the population are those in the lower socio-economic areas and have served to pinpoint so called "soft spots" in the various communities where increased effort is needed for use of the Salk vaccine to prevent the occurrence of outbreaks of poliomyelitis.

The most recent statewide estimates indicate that as of May 1960, 40 per cent of the population of California had maximum protection against poliomyelitis. Eleven per cent had been partially vac-

inated (one or two injections) but 49 per cent had had no vaccine at all.

Among California children under five years of age who accounted for 44 per cent of all cases of paralytic poliomyelitis last year there are still 741,700 (or 42 per cent of the children in that age group) who have had fewer than the three or more injections required. Nineteen per cent (335,000) of them have had no vaccine at all.

There is no specific treatment for poliomyelitis. Vaccine is the only effective way to prevent paralytic disease. There is no question of the safety of Salk-type poliomyelitis vaccine. Not a single case of poliomyelitis attributable to the vaccine has appeared in tens of millions of vaccinations given since present standards of safety and manufacture were established. The Salk-type vaccine will for some time be the only widely available immunizing agent against poliomyelitis.

The Problem Nationwide

The number of cases of paralytic poliomyelitis in the United States, in 1959 showed a 54 per cent increase over 1958—5,694 cases in 1959 against 3,697 in 1958. Eighty-two per cent of the 1959 cases occurred in persons who had not been fully vaccinated. Paralytic poliomyelitis was concentrated in poorly immunized lower-income groups living in crowded substandard areas. Nearly half of all paralytic cases were in pre-school-age children. Four and a half million children under five years of age have had no vaccine.

The Salk vaccine continued to prove approximately 90 per cent effective in preventing paralytic poliomyelitis last year. The problem is the familiar one of overcoming personal or community inertia in the use of an effective protective health measure.

In a letter sent April 1, 1960, to executives of national health, welfare and civic organizations, the National Health Council stated, "Any needless case of poliomyelitis now, five years after the introduction of the Salk vaccine, is a serious reflection on all of us. Any case that develops among persons who

TABLE 1.—Paralytic Poliomyelitis in California, 1950-1959

Year of Onset	Cases		Deaths	
	Number	Rate Per 100,000 Population	Number	Fatality Rate Per 100 Cases
1950	1,496	14.1	107	7.2
1951	2,284	20.6	144	6.3
1952	2,572	22.2	201	7.8
1953	2,240	18.6	125	5.6
1954	2,628	20.9	116	4.4
1955	1,292	9.9	36	2.8
1956	1,283	9.4	53	4.1
1957	283	2.0	19	6.7
1958	232	1.6	13	5.6
1959	408	2.7	20	4.9

*Data and statement prepared by the California Department of Public Health. Publication recommended by the Committee on State Medical Services.

Source: State of California Department of Public Health, Records of Bureau of Acute Communicable Diseases.

have not been fully vaccinated should be regarded as needless. It probably could have been prevented. For the most part, these cases indicate that we have either failed to overcome unfounded fears or complacency, or neglected to provide the necessary means so that the personal decision to obtain protection could be carried out promptly and without undue hardship."

Action Under Way

The Public Health Service is spearheading the attack through public and professional information, assistance to State Health Departments, and the development of a rapid method of locating unimmunized groups in any community. The Communicable Disease Center in Atlanta has produced a *Manual for Conducting an Immunization Survey* and has developed a training program in its use. Some 200 communities have completed or have under way such surveys.

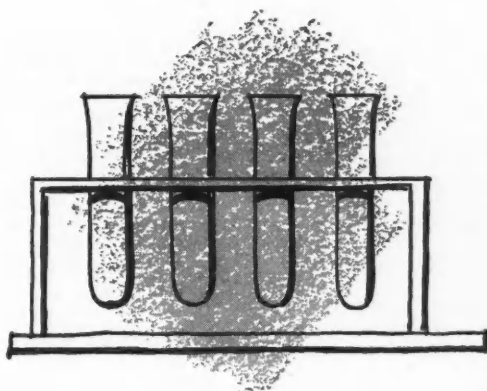
The National Advertising Council prosecuted a public information program through the spring and early summer of this year, providing a national backdrop of advertising through television, radio and newspapers. The program was sponsored jointly

by the American Medical Association, the National Foundation, and the Public Health Service.

The American Medical Association, the American Academy of Pediatrics and the American Academy of General Practice are again urging their memberships to cooperate in extending poliomyelitis protection.

Both the Metropolitan Life Insurance Company and the Equitable Life Assurance Society are promoting poliomyelitis protection through national publicity and organized efforts through their representatives throughout the country.

The National Health Council is seeking the cooperation of more than 100 national health, welfare and civic organizations urging, on the premise that *organized local community action continues to be the greatest need*, that they communicate with state and local affiliates and encourage them to cooperate, as may be appropriate, with health officers or other health authorities in any effort they may undertake to promote wider use of the Salk vaccine. Cooperation will be needed the National Health Council states, in determining the "soft spots" and in organized efforts to expand the level of poliomyelitis protection.



NEWS & NOTES

NATIONAL • STATE • COUNTY

BUTTE

On July 1, **Dr. Irena A. Heindl** became Butte County Director of Public Health. She was formerly chief of the Bureau of School Health of the Alameda County Health Department.

Dr. Heindl replaced Dr. Arnold Brockmole, who resigned in December 1959.

Dr. Donald Hewitt, Butte County Hospital director and medical superintendent, served as temporary health officer in the interim.

LOS ANGELES

The 1960-1961 officers of the **Los Angeles Radiological Society**, who took office on September 1, 1960, and serve until September of next year are: Dr. Robert Rickenberg, president; Dr. Robert Engle, vice-president; Dr. Denis Adler, treasurer; and Dr. Walter Stilson, secretary. Dr. Putnam Kennedy was elected to the executive committee for a term of three years.

NAPA

A series of six lecture and discussion meetings of two hours each on **neuropsychiatry in general practice** will be held Friday evenings, September 22 and 29, and October 6, 13, 20 and 27 at Napa State Hospital. The course, presented by the medical staff of the hospital and the University of California Department of Continuing Education in Medicine, will cover a wide range of problems commonly encountered in medical practice, and the emphasis will be on dealing with them at the community level. The first hour of each session will be given over to presentation of material, and the second to questions and general discussion.

Although it is the second part of a series of twelve lectures that began last spring, the fall course has been organized so that it may be taken independently.

Further information may be obtained from the Department of Continuing Education, UC Medical Center, San Francisco 22.

SAN FRANCISCO

Announcement of the appointment of **J. Milo Anderson** as executive vice-president of the Presbyterian Medical Center, San Francisco, was made last month by John R. Little, president of the board of trustees. Mr. Anderson, who has been administrator of the University of Rochester (N. Y.) Strong Memorial Hospital for the past five years, takes over his new duties the middle of this month.

GENERAL

Dr. Arthur E. Varden of San Bernardino, has been appointed and **Dr. L. S. Goerke** of Los Angeles, has been reappointed to the State Board of Public Health by Governor Edmund G. Brown. Both terms are for four years.

Dr. Varden succeeds **Dr. Harry E. Henderson** of Santa Barbara, whose term expired. Dr. Henderson has served as a member of the board since 1944.

* * *

The annual meeting of the **Pacific Coast Fertility Society** will be held November 10 to 13 at the Tropicana Hotel, Las Vegas, Nevada. Guest speakers will be Dr. John I. Brewer, professor of obstetrics and gynecology, Northwestern University; Dr. Melvin M. Grumbach, assistant professor of pediatrics, Columbia University; Dr. Robert W. Kistner, associate professor in obstetrics and gynecology, Harvard School of Medicine; and Dr. Somers H. Sturgis, clinical professor of gynecology, Harvard School of Medicine.

Further information may be obtained from Anah C. Wineberg, M.D., 3120 Webster Street, Oakland 9.

* * *

The ninth annual **Cancer Seminar** of the Arizona division of the American Cancer Society will be held January 12 to 14, 1961, at Tidelands Motor Inn, Tucson. The announcement of the meeting said it would be devoted to the various aspects of chemotherapy, virology, endocrinology, environmental factors, etc., as they relate to tumor formation or the therapy for tumors.

* * *

The Biennial **Western Conference on Anesthesiology** will be held May 16, 17, 18, 1961, at the Sheraton Hotel, Portland, Oregon. Further information may be obtained from T. F. Brinton, M.D., secretary-treasurer, Sacred Heart General Hospital, Eugene, Oregon.

POSTGRADUATE EDUCATION NOTICES

THIS BULLETIN of the dates of postgraduate education programs and the meetings of various medical organizations in California is supplied by the Committee on Postgraduate Activities of the California Medical Association. In order that they may be listed here, please send communications relating to your future medical or surgical programs to Postgraduate Activities, California Medical Association, 2975 Wilshire Boulevard, Los Angeles 5.

UNIVERSITY OF CALIFORNIA AT LOS ANGELES

Clinical Traineeships — Anesthesia, Dermatology and Pediatric Cardiology. Dates by arrangement. Minimum period—two weeks. Fee: Two weeks, \$150.00; four weeks, \$250.00.

Elements of Psychiatry in Clinical Practice. Thursdays, September 17 through June 11. (2 Conferences at Lake Arrowhead, plus weekly evening sessions.) Ninety-two hours. Fee: \$150.00.

Below-Knee Prosthetics. Monday through Friday, September 19 through 23. Enrollment limited to 20. Fee: \$125.00.

Psychotherapeutic Methods for General Practitioners. Mondays, October 3 through March 27. Seventy-two hours. Fee: \$75.00.

Neuropathology. Tuesdays and Thursdays, October 18 through December 6. Twenty-eight hours. Fee: \$105.00.

Below-Knee Prosthetics. Monday through Friday, October 31 through November 4. Enrollment limited to 20. Fee: \$125.00.

Proctology—Lecture and Surgery Demonstration. Wednesday, November 30. Nine hours. Fee: \$40.00.

Diagnosis and Treatment of Anemia. Friday and Saturday, December 9 and 10. Twelve hours. Fee: \$40.00.

Below-Knee Prosthetics. Monday through Friday, December 12 through 16. Enrollment limited to 20. Fee: \$125.00.

Mexico—Clinical Postgraduate Program (sessions to be held in Mexico City, Guadalajara and Acapulco). January 9 through 22. Twenty-four hours. Fee: \$125.00.

Bedside Clinics (Harbor Hospital, Torrance). Thursdays, January 12 through March 30. Twenty-four hours. Fee: \$50.00.

Below-Knee Prosthetics. Monday through Friday, January 23 through 27. Enrollment limited to 20. Fee: \$125.00.

Psychiatry in Medicine. Friday and Saturday, March 10 and 11. Twelve hours. Fee: \$15.00 (includes one lunch and one dinner).

Israel—Clinical Postgraduate Program (sessions to be held in Jerusalem and Tel Aviv). April 13 through May 4. Thirty-two hours. Fee: \$150.00.

Low Back Pain. Friday and Saturday, May 12 and 13. Twelve hours.*

For Nurses and Ancillary Personnel

Thirteen courses will be offered during the summer and fall for nurses and other ancillary personnel.

Contact: Thomas H. Sternberg, M.D., assistant dean for Continuing Medical Education, U.C.L.A. Medical Center, Los Angeles 24. BRadshaw 2-8911, Ext. 7114.

Symposium on Ear-Nose-Throat Problems in Children, Children's Hospital. Saturday, November 5. Seven hours. Fee: \$12.50.

Psychological Problems in Medical Practice. Friday through Sunday, November 11 through 13. Twenty-one hours. Fee: \$10.00.

Retinal Detachment Surgery. Thursday through Saturday, December 1 through 3. Twenty-one hours.*

Symposium on Eye Problems in Children, Children's Hospital. Saturday, January 14. Seven hours. Fee: \$12.50.

Civilization and Man: The Control of the Mind. Saturday through Monday, January 28 through January 30. Twenty-one hours. Fee: \$25.00.

A Course in Pediatrics. Saturday through Monday, February 11 through 13. Twenty-one hours.*

Symposium on Perinatal Problems, Children's Hospital. Saturday, March 11. Seven hours. Fee: \$12.50.

Diagnostic Radiology. Wednesday through Sunday, March 15 through 19. Thirty-five hours.*

Fundamental Practices of Radioactivity and the Diagnostic and Therapeutic Uses of Radioisotopes. Two or three month course limited to one enrollee per month. Fee: \$350.00.

For Nurses and Ancillary Personnel

Eleven courses will be offered during the fall and winter for nurses and other ancillary personnel.

Contact: Seymour M. Farber, M.D., assistant dean, Department of Continuing Medical Education, University of California Medical Center, San Francisco 22. MOntrorse 4-3600, Ext. 665.

UNIVERSITY OF CALIFORNIA, SAN FRANCISCO

Radiological Physics (32 Tuesday evenings). September 20 through May 2. For residents. Fee: \$100.00.

Psychotherapy in General Practice. Wednesday evenings, September 21 through December 7. Fee: \$25.00.

Neuropsychiatry in General Practice (Napa State Hospital). Thursday evenings, September 22 through October 27. Fee: \$5.00.

Advances in Surgical Anatomy, Normal Anatomy and Histology of the Eye. Thursday and Friday, September 22 and 23. Fourteen hours. Fee: \$50.00.

Internal Medicine. Tuesday through Saturday, September 27 through October 1. Thirty-five hours.*

Tonography. Saturday, October 2. Seven hours. Fee: \$25.00.

X-raying by Means of Words. Thursday evenings. October 6 through January 12. Fee: \$5.00.

Symposium on Surgical Care of the Acutely Injured Patient, Franklin Hospital. Saturday and Sunday, October 8 and 9. Fourteen hours. Fee: \$25.00.

Environmental Dermatoses Due to Contact and Physical Agents. Friday and Saturday, October 14 and 15. Fourteen hours. Fee: \$40.00.

Advances in Ophthalmic and General Pathology. Thursday through Saturday, November 3 through 5. Twenty-one hours.*

*Fee to be announced.

PRESBYTERIAN MEDICAL CENTER, SAN FRANCISCO

Eye Conference. Each Monday morning.

Didactic Course in Ophthalmology. Each Monday and Wednesday, 7 to 8:30 p.m.

Clinical Problems of Ophthalmology, all-day conference. 9 a.m., Saturday, September 24. Open to visiting physicians. Cases for examination in Eye Clinic.

Conference on Cataracts (limited to physicians specializing in Eye or EENT). Wednesday through Friday, November 9 through 11. Fee: \$100.00.

Contact: Arthur Selzer, M.D., program committee chairman, Presbyterian Medical Center, Clay and Webster Sts., San Francisco 15.

UNIVERSITY OF SOUTHERN CALIFORNIA, LOS ANGELES

Intensive Review of Internal Medicine. September 26 through October 7. Fee: \$65.00.

Pediatric Therapy. Monday, October 10. Fee: \$25.00.

Hormones and Electrolytes. Thursday and Friday, October 13 and 14.*

Bedside Clinics. Thursdays, October 6 through January 12. Fee: \$65.00.

Recent Advances in Medicine. Thursday and Friday, November 17 and 18.*

Nuclear Medicine:

Part I, January. Fee: \$50.00.

Part II, eight weeks. Fee: \$350.00.

Part III, twelve weeks. Fee: \$350.00.

Clinical Hematology. Saturday and Sunday, February 25 and 26.*

Cardiac Resuscitation. Each Wednesday by appointment, 4 to 6 p.m. USC Medical Research Building, Room 211, 2025 Zonal Avenue. Tuition: \$30.00. (Each session all-inclusive.)

Basic Home Course in Electrocardiography. One year postgraduate series, electrocardiogram interpretation by mail. Physicians may register at any time and receive all 52 issues. Fifty-two weeks. Fee: \$100.00.

Advance Home Course in Electrocardiography. One year postgraduate series, electrocardiogram interpretation by mail. Fifty-two issues: \$85.00. Physicians may register at any time.

Contact: Phil R. Manning, M.D., associate dean and director, Postgraduate Division, University of Southern California School of Medicine, 2025 Zonal Avenue, Los Angeles 33. CAPItal 5-1511.

COLLEGE OF MEDICAL EVANGELISTS

SURGICAL ANATOMY (Dissection, Lectures and Demonstrations). Monday and Wednesday, September 13 through June 9. 324 hours. Fee: \$250.00.

Upper and Lower Extremities. Monday and Wednesday, September 14 through December 21. 140 hours. Fee: \$125.00.

Thorax, Abdomen, Pelvis. Monday and Wednesday, January 4 through April 12. 121 hours. Fee: \$125.00.

Head and Neck. Monday and Wednesday, April 19 through May 31. Sixty-three hours. Fee: \$75.00.

SURGICAL ANATOMY (Lectures and Demonstrations only). Wednesdays, September 13 through June 9. Eighty-two hours. Fee: \$100.00.

Upper and Lower Extremities. Wednesdays, September 14 through December 21. Thirty hours. Fee: \$50.00.

Thorax, Abdomen, Pelvis. Wednesdays, January 4 through April 12. Twenty-eight hours. Fee: \$50.00.

Head and Neck. Wednesdays, April 12 through May 31. Twenty-four hours. Fee: \$35.00.

Surgical Pathology. Wednesdays, September 13 through June 9. One hundred eight hours. Fee: \$100.00.

Surgical Physiology. Thursdays, September 13 through June 9. Sixty hours. Fee: \$75.00.

Alumni Postgraduate Convention Refresher Courses, March 12 and 13, on the campus of the College of Medical Evangelists at White Memorial Hospital.

Joint Manipulation. Monday through Friday, March 20 through 24. Twenty hours. Fee: \$100.00.

Tropical Public Health. Monday through Friday, April 3 through 28. Fee: \$65.00.

Clinical Traineeships available in clinical departments by arrangement with Postgraduate Division and Postgraduate Chairman of department involved. In addition to those listed other traineeships in other departments can be arranged. Eighty hours minimum. Limited enrollment. Begin when individually arranged.

*Fee to be announced.

1. **Anesthesia.** Six months. 250 to 300 hours. Fee: \$350.00.

2. **Internal Medicine.** Two weeks to nine months.

3. **Pulmonary Diseases** (can be arranged).

4. **Traumatology.** One month. 160 hours. Fee: \$125.00.

5. **Urology** (can be arranged).

For information contact: G. E. Norwood, M.D., assistant dean and chairman, Division of Postgraduate Medicine, College of Medical Evangelists, 1720 Brooklyn Ave., Los Angeles 33. ANgelus 9-7241, Ext. 214.

CALIFORNIA MEDICAL ASSOCIATION POSTGRADUATE CIRCUIT COURSES

For Dunsmuir, Redding, Chico, and Marysville in cooperation with Stanford University School of Medicine. Begins week of September 19, 1960.

For Eureka, Ukiah, Napa and Auburn in cooperation with University of California, San Francisco School of Medicine. Begins week of September 19, 1960.

POSTGRADUATE INSTITUTES—1961

Southern Counties, February 2 and 3, El Mirador Hotel, Palm Springs, in cooperation with University of Southern California School of Medicine. *Chairman:* Raymond Tatrow, M.D., 1875 North "D" Street, San Bernardino.

West Coast Counties, March 2 and 3, Del Monte Lodge, Pebble Beach, in cooperation with College of Medical Evangelists. *Chairman:* A. F. Kandlbinder, M.D., 835 Cass Street, Monterey.

North Coast Counties, March 23 and 24, Flamingo Hotel, Santa Rosa, in cooperation with University of California, San Francisco. *Chairman:* Milton A. Antipa, M.D., 50 Montgomery Drive, Santa Rosa.

San Joaquin Valley, April 13 and 14, Ahwahnee Hotel, Yosemite, in cooperation with UCLA School of Medicine. *Chairman:* Malcolm J. Masten, M.D., 1051 R Street, Fresno.

Sacramento Valley Counties, June 29 and 30, in cooperation with Stanford University School of Medicine. Lake Tahoe. Location and regional chairman to be announced.

AUDIO-DIGEST FOUNDATION

A nonprofit subsidiary of the C.M.A., offers (on a subscription basis) a series of six different hour-long tape recordings covering general practice, surgery, internal medicine, obstetrics and gynecology, pediatrics and anesthesiology. Designed to keep physicians posted on what is new and important in their respective fields, these programs survey current national and international literature of interest and contain selected highlights of on-the-spot recordings of national scientific meetings, panel discussions, symposia, and individual lectures. Audio-Digest Internal Medicine will shortly be available on long-play discs, requiring only a 33 1/3 rpm phonograph to utilize the service. For information contact Mr. Claron L. Oakley, Editor, 1919 Wilshire Blvd., Los Angeles 57, HUbbard 3-3451.

Medical Dates Bulletin

SEPTEMBER MEETINGS

- SANTA BARBARA COUNTY HEART ASSOCIATION Physicians Symposium.** September 17, 9:00 a.m. to 5:00 p.m., Biltmore Hotel, Santa Barbara. *Contact:* E. J. Hannon, executive director, 18 La Arcada Court, Santa Barbara.
- CALIFORNIA SOCIETY OF INTERNAL MEDICINE Annual Meeting, Yosemite.** September 23, 24 and 25. *Contact:* Barbara E. Oulton, executive secretary, 350 Post St., San Francisco 8.
- WASHINGTON STATE MEDICAL ASSOCIATION Annual Convention.** September 25 through 28. Olympic Hotel, Seattle, Washington. *Contact:* R. W. Neill, executive secretary, 1309 7th Avenue, Seattle, Washington.
- SOUTHERN CALIFORNIA SOCIETY OF GASTROENTEROLOGY Panel Discussion "Ulcerative Colitis."** September 27. Los Angeles County Medical Association. *Contact:* William E. Molle, M.D., secretary-treasurer, 6221 Wilshire Blvd., Los Angeles 48.
- PAN-PACIFIC SURGICAL ASSOCIATION 8th Intensive Surgical Congress, embracing all Surgical Specialties.** September 27 through October 5. Honolulu, Hawaii. *Contact:* F. J. Pinkerton, M.D., director general, Suite 230, Alexander Young Building, Honolulu 13.

OCTOBER MEETINGS

- AMERICAN SOCIETY OF PLASTIC AND RECONSTRUCTIVE SURGERY.** Statler Hotel, Los Angeles, October 2 through 7. *Contact:* Thomas R. Broadbent, M.D., secretary, 508 E. S. Temple, Salt Lake City.
- SAN DIEGO COUNTY HEART ASSOCIATION 10th Annual Symposium on Heart Disease.** October 3 and 4. El Cortez Hotel. *Contact:* O. Martin Avison, 3545 Fourth Avenue, San Diego 3.
- AMERICAN ASSOCIATION FOR THE SURGERY OF TRAUMA.** Coronado Hotel, San Diego. October 5 through 7. *Contact:* William T. Fitts, Jr., M.D., secretary, 3400 Spruce St., Philadelphia 4.
- LOS ANGELES COUNTY HEART ASSOCIATION 30th Annual Professional Symposium on Cardiovascular Diseases.** October 5 and 6. Beverly Hilton Hotel, Beverly Hills. *Contact:* Los Angeles County Heart Association, 2405 W. 8th St., Los Angeles 57.
- SAN FRANCISCO HEART ASSOCIATION 30th Annual Postgraduate Symposium on Heart Disease.** October 5 through 7. St. Francis Hotel, San Francisco. *Contact:* Mr. Lawrence I. Kramer, Jr., executive director, 259 Geary St., San Francisco 2.
- WESTERN INDUSTRIAL MEDICAL ASSOCIATION combined Meeting with 4th Western Industrial Health Conference.** October 7 through 9. Jack Tar Hotel, San Francisco. *Contact:* Verne G. Ghormley, M.D., president, 3032 Tulare Street, Fresno 21.
- METABOLIC ERRORS, GENETICS AND MENTAL DISEASE, Second Invitational Conference.** October 8, Napa State Hospital, Napa. *Contact:* David Wardell, M.D., chief of professional education, Sonoma State Hospital, Eureka, Calif.
- AMERICAN COLLEGE OF SURGEONS, 46th Annual Clinical Congress, San Francisco.** October 10 to 14. *Contact:* William E. Adams, M.D., secretary, 40 E. Erie St., Chicago 11, or Leon Goldman, M.D., arrangements chairman, professor and chairman, Department of Surgery, University of California Medical Center, San Francisco 22.

AMERICAN CANCER SOCIETY CALIFORNIA DIVISION Annual Meeting. October 13 through 15. Villa Hotel, San Mateo. *Contact:* Jane N. Lounsbury, assistant director, Field Services, 467 O'Farrell, San Francisco.

KAISER FOUNDATION HOSPITALS IN NORTHERN CALIFORNIA Fourth Annual Symposium on Human Genetics. October 14 and 15. Fairmont Hotel, San Francisco. *Contact:* Martin A. Shearn, M.D., Director of Medical Education, 280 West MacArthur Blvd., Oakland.

CALIFORNIA ACADEMY OF GENERAL PRACTICE 12th Annual Scientific Assembly. October 16 through 19. Masonic Memorial Temple, San Francisco. *Contact:* William W. Rogers, executive secretary, 461 Market St., San Francisco 5.

WESTERN ORTHOPEDIC ASSOCIATION Annual Convention. October 22 through 27. Hotel Del Coronado, Coronado. *Contact:* Mrs. Vi Mathieson, executive secretary, 354 21st St., Oakland 12.

ASSOCIATION OF STATE AND TERRITORIAL HEALTH OFFICERS. Jack Tar Hotel, San Francisco. October 26 through 28. *Contact:* A. C. Offutt, M.D., secretary-treasurer, 1330 W. Michigan Street, Indianapolis 7.

ST. JUDE HOSPITAL—FULLERTON 2nd Annual Postgraduate Assembly. October 27 and 28. St. Jude Hospital. *Contact:* B. L. Tesman, M.D., chairman, St. Jude Hospital, Fullerton.

AMERICAN SCHOOL HEALTH ASSOCIATION, San Francisco. October 30 through November 4. *Contact:* A. O. DeWeese, M.D., executive secretary, 515 E. Main St., Kent, Ohio.

AMERICAN PUBLIC HEALTH ASSOCIATION, San Francisco. October 31 through November 4. *Contact:* Berwyn F. Mattison, M.D., executive director, 1790 Broadway, New York 19.

NOVEMBER MEETINGS

- SAN DIEGO COUNTY GENERAL HOSPITAL 14th Annual Postgraduate Assembly.** Wednesday and Thursday, November 2 and 3. San Diego County General Hospital, North End of Front Street, San Diego. *Contact:* Frank H. Carter, M.D., chairman, 2001 Fourth Avenue, San Diego 1.
- AMERICAN SOCIETY OF TROPICAL MEDICINE AND HYGIENE.** Biltmore Hotel, Los Angeles. November 2 through 5. *Contact:* Rolla B. Hill, M.D., executive secretary, 3575 St. Gaudens Rd., Miami 33, Florida.
- LOS ANGELES PEDIATRIC SOCIETY Annual Brennemann Lectures.** November 9, 4 to 10 p.m., and November 10, 9 a.m. to 7 p.m. Ambassador Hotel, Los Angeles. *Contact:* Neil N. Litman, M.D., vice-president, 5830 Overhill Drive, Los Angeles 43.
- SAN DIEGO CHAPTER OF THE CALIFORNIA ACADEMY OF GENERAL PRACTICE Scientific Symposium.** November 10, 11 and 12. Hotel Riviera, Las Vegas, Nevada. *Contact:* George H. Burkhart, M.D., chairman, program committee, 514 3rd Ave., Chula Vista.
- PACIFIC COAST FERTILITY SOCIETY.** November 10 through 13, Hotel Tropicana, Las Vegas, Nev. *Contact:* Anah C. Wineberg, M.D., secretary-treasurer, 3120 Webster Street, Oakland.
- CALIFORNIA SANATORIUM ASSOCIATION Annual Business, Clinical and Administrative Session.** November 12. Olive View Hospital, Olive View, Calif. *Contact:* J. P. Myles Black, M.D., Olive View Hospital, Olive View, Calif.
- CALIFORNIA CONFERENCE OF LOCAL HEALTH OFFICERS Fall Meeting.** November 14 and 15, Oakland, Calif. *Contact:* Donald S. Davy, M.D., State Department of Public Health, 2151 Berkeley Way, Berkeley 4.

AMERICAN COLLEGE OF PHYSICIANS Southern California Regional Annual Basic Science Lectureship. November 18, California Club, Los Angeles. Dinner and cocktails, 6:30 p.m. Speaker: Melvin Calvin, Ph.D., professor of chemistry, University of California, Berkeley. Subject: "Origins of Life." Members and invited guests. Contact: George C. Griffith, M.D., governor ACP, P.O. Box 25, 1200 N. State Street, Los Angeles 33. CApitol 5-3131, Ext. 7-1543.

SOUTHERN CALIFORNIA SOCIETY OF GASTROENTEROLOGY Panel Discussion "Enzymology and G.I. Diagnosis." November 22. Los Angeles County Medical Association. Contact: William E. Molle, M.D., secretary-treasurer, 6221 Wilshire Blvd., Los Angeles 48.

DECEMBER MEETINGS

AMERICAN COLLEGE OF CHEST PHYSICIANS Sixth Annual Postgraduate Course on Diseases of the Chest. December 5 through 9, 9 to 5 daily, Jack Tar Hotel, San Francisco. Contact: Mr. Murray Kornfeld, executive director, 112 East Chestnut Street, Chicago 11, Ill.

1961 MEETINGS

LONG BEACH HEART, CANCER AND TB Third Annual Medical Symposium on Diseases of the Heart, Lungs and Chest. January 18, 1:30 p.m., Long Beach Petroleum Club. Contact: Leslie R. Raymond, executive director, 2034 Pacific Avenue, Long Beach.

AMERICAN COLLEGE OF PHYSICIANS Southern California Region, Annual Meeting, in cooperation with Northern California and Nevada, Arizona and New Mexico. Biltmore Hotel, Santa Barbara, February 3, 4, 5, 1961. Abstracts (300 words) of papers for consideration of presentation at the meeting should be sent in triplicate before November 1 to Sherman Mellinkoff, M.D., chairman, scientific program committee, U.C.L.A. Medical Center, Los Angeles 24.

OBSTETRICAL AND GYNECOLOGICAL ASSEMBLY OF SOUTHERN CALIFORNIA, 16th Annual Mid-Winter Clinical Assembly. Ambassador Hotel, Los Angeles, February 13 through 17. Contact: Dee Davis, executive secretary, 5478 Wilshire Blvd., Los Angeles 36, WEbster 4-1551.

CALIFORNIA TUBERCULOSIS AND HEALTH ASSOCIATION, California Trudeau Society Annual Joint Meeting. February 19 through 22, Jack Tar Hotel, San Francisco. Contact: Executive director, C.T.H.A., 130 Hayes Street, San Francisco.

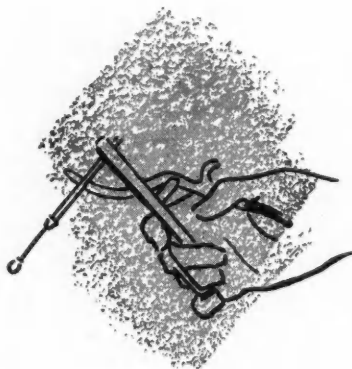
SOUTHERN CALIFORNIA SOCIETY OF GASTROENTEROLOGY. "Problems and Pitfalls in Differential Diagnosis of Jaundice"—Leon Schiff, M.D., February 27, Los Angeles County Medical Association. Contact: William E. Molle, M.D., secretary-treasurer, 6221 Wilshire Blvd., Los Angeles 48.

SOUTHWESTERN PEDIATRIC SOCIETY Postgraduate Lecture Series. March 7 and 8, Statler Hotel, Los Angeles. Contact: Harry O. Ryan, M.D., secretary, 194 N. El Molino, Pasadena.

COLLEGE OF MEDICAL EVANGELISTS Annual Alumni Postgraduate Convention, Scientific Assembly, Ambassador Hotel, March 14, 15 and 16. Contact: F. Harriman Jones, M.D., general chairman, College of Medical Evangelists, 316 North Bailey Street, Los Angeles 33.

INDUSTRIAL MEDICAL ASSOCIATION. Biltmore Hotel, Los Angeles, April 11 through 13. Contact: Leonard Arling, M.D., secretary, The Northwest Industrial Clinic, 3101 University Avenue, S.E., Minneapolis 14.

CALIFORNIA MEDICAL ASSOCIATION Annual Meeting, Ambassador Hotel, Los Angeles. April 30 through May 3. Contact: John Hunton, executive secretary, 693 Sutter Street, San Francisco 2; or Ed Clancy, director of public relations, 2975 Wilshire Blvd., Los Angeles 5.





THE PHYSICIAN'S *Bookshelf*

COMMUNICABLE AND INFECTIOUS DISEASES—Diagnosis, Prevention, Treatment—4th Edition—Franklin H. Top, A.B., M.D., M.P.H., F.A.C.P., F.A.A.P., F.A.P.H.A., Professor and Head, Department of Hygiene and Preventive Medicine, State University of Iowa, Iowa City, Iowa; Director, University Dept. of Health, and Director, Institute of Agricultural Medicine, State University of Iowa; Consulting Director, State (of Iowa) Hygienic Laboratories; and Consultant, Communicable Disease Center, U. S. Public Health Service, Atlanta, Ga.; and Collaborators. The C. V. Mosby Company, St. Louis, Mo., 1960. 812 pages, with 122 figures and 15 color plates, \$20.00.

This is the fourth edition of a book which first appeared in 1941 and has become well known as a handy reference for persons whose professional duties necessitate contact with a wide variety of communicable or infectious diseases. It is a comprehensive volume of over 800 pages with numerous up-to-date references. New chapters on acute respiratory infections, enteroviruses, and staphylococcal infections have been added and those on chemotherapy and antibiotics, management of communicable diseases in the hospital and at home, the bacterial pneumonias, influenza, infantile diarrhea, gonorrhea, the leptospiroses and rickettsial diseases have been completely rewritten. Remaining chapters have been revised. Some twenty-one collaborators are contributors in their special fields.

This handbook—grown to a full sized text—will be useful to most general practitioners, pediatricians, internists and medical students.

WM. DEAMER, M.D.

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CARDIAC AUSCULTATION—Including Audio-Visual Principles. Second Revised Enlarged Edition—J. Scott Butterworth, M.D., Associate Professor of Medicine, New York University Post-Graduate Medical School; Maurice R. Chassin, M.D., Associate Professor of Clinical Medicine, New York University Post-Graduate Medical School; Robert McGrath, M.D., Associate Professor of Clinical Medicine, New York University Post-Graduate Medical School; and Edmund H. Reppert, M.D., Assistant Professor of Clinical Medicine, New York University Post-Graduate Medical School. Grune & Stratton, Inc., 381 Fourth Avenue, New York 16, New York, 1960. 102 pages, \$6.25.

This second edition has been enlarged in the frontal plane only (it is 1 inch wider and taller), while the sagittal plane has actually been decreased by 9 pages. The material is similar to that of the first edition with some additions and revisions to bring it reasonably up to date. There is a brief description of the Cambridge equipment employed as audio-visual aids in the teaching of auscultation. A brief review of the physical principles of sound is followed by presentations of factors influencing the perception of heart sounds, the origin of heart sounds, and the nature and properties of murmurs. The remainder of the book is devoted to a systematic description of sounds and murmurs in various clinical conditions presented almost in an outline form. The illustrations are suitable and have been improved over the previous edition by including with the phonocardiogram a reference tracing for timing purposes.

A few minor criticisms may be made. While 17-inch oscilloscopes and tape recordings are helpful in teaching auscultation, they are expensive. A simple, direct writing phonocardiograph such as the Elema may prove very valuable for small groups of students and provides the additional advantage of having a phonocardiogram immediately available for study and adding to the patient's medical record. The attempt to separate semilunar and AV valve regurgitation into insufficiency—"the valves do not close completely" and incompetence—"it results from dilatation of the valve rather than from intrinsic disease of the valve cusps" is awkward and of no value whatsoever as far as the mechanism of production of the regurgitant murmur is concerned. Fortunately the presentation is not further confused by the use of the additional terms, "organic" and "relative" stenosis. Brevity often leads to omission of detail resulting in inaccurate description. Primary pulmonary hypertension, for example, is accompanied just as frequently by a systolic ejection sound and a prominent atrial gallop as by the Graham Steell murmur and the occasional murmur of tricuspid insufficiency as described on page 92. Diastolic murmurs in ventricular septal defects are described on page 88 as being of the same variety and due to similar factors as those heard in atrial septal defects. Such an inaccurate statement is inexcusable. While a Graham Steell murmur may occur in both conditions when pulmonary hypertension is present, the tricuspid flow murmur of an atrial septal defect heard along the lower left sternal border is quite different in character and origin than the mitral flow murmur heard at the apex in a ventricular septal defect.

This brief review of cardiac auscultation cannot be enthusiastically recommended to either students or physicians when there are at least four other superior comprehensive monographs on phonocardiography and auscultation available today.

H. N. HULTGREN, M.D.

ANTIBIOTICS ANNUAL—1959-1960. Proceedings of the Seventh Annual Symposium on Antibiotics—Chairman of the Symposium, Henry Welch, Ph.D.; under the Editorial Direction of Felix Marti-Ibanez; and sponsored by Antibiotics and Chemotherapy and Antibiotic Medicine and Clinical Therapy. November 4, 5, and 6, 1959, Washington, D.C. Antibiotica, Inc., 30 East 60th Street, New York 22, N. Y., 1960. 1034 pages, \$15.00.

The annual account of the doings of the Symposium on Antibiotics which is held each fall in Washington, D. C., under the chairmanship of Henry Welch is mandatory reading for everyone who is specifically interested in infectious diseases and antimicrobial therapy. No known critiques are applied to the selection of papers to be read, so that there are wide swings between the most trivial or even erroneous observations to some that are extremely important. The practicing physician is advised to obtain his information about what is contained in this massive book from his colleagues who have special knowledge in the field.

LOWELL A. RANTZ, M.D.

MASSAGE, MANIPULATION AND TRACTION—Edited by Sidney Licht, M.D., Honorary Member, British Association of Physical Medicine, Danish Society of Physical Medicine, and the French National Society of Physical Medicine, Elizabeth Licht, Publisher, 360 Fountain Street, New Haven, Conn., 1960. 275 pages, \$10.00.

This is a continuation of the series of books by this editor, constituting Volume V of a Physical Medicine Library. Three aspects are discussed in detail, consisting of massage, manipulation, and traction. These three modalities are used by cultists and very little is taught to the physician regarding their judicious application.

Besides the classical massage technique of stroking, kneading, and percussion, several new techniques, used mainly in Europe, are presented. An entirely new form of massage, called "connective tissue massage," is presented for the first time in American literature. It is used for the relief of pain through the mediation of pain reflex phenomena. This reviewer is inclined to agree with the publisher's statement that "some massage practices are so new that by the time you read this book they may have been abandoned." However, it is interesting to know what others are doing elsewhere. Another interesting form of massage treatment is the term "syncardial massage," in which pneumatic cuffs are attached to the calf group and inflated in a rhythm to correspond with the pulse wave coming from the heart. The theory being that as the pulse wave travels down the artery it is given an extra pumping action and in this way provides greater arterial pressure for use in arteriosclerotic conditions in the lower extremities. The theory appears to be sound but no laboratory evidence is cited of its clinical value.

Under manipulation, maneuvers are shown for manipulating both the spine and lower extremities. This aspect is written by English physicians and this reviewer is not sure of their accepted status even in England. Certainly, one cannot agree with the broad statements of some of the chapters, e.g., "It is possible by these means to reduce a nuclear protrusion."

The section on traction shows all of the routine methods for giving traction both to the cervical and spinal areas. Actually, the chapters are a resume of literature on the use of traction in clinical conditions. The great disparity between various publishers of articles is emphasized and this reviewer is left with the impression that each clinician will have to form his own opinion and proceed with it.

This reviewer agrees with the statement of the editor that this material was presented in the belief that the more that is published about questionable procedures the sooner we may learn what is worth continued usage. Certainly, there are indications for massage and manipulation and traction, and those men interested in orthopedics and physical medicine could read this book with profit.

S. MALVERN DORINSON, M.D.

PSYCHOANALYSIS OF TODAY—S. Nacht. American Adaptation Prepared by Ruth Emma Roman. Grune & Stratton, 381 Fourth Avenue, New York 16, New York, 1959. 228 pages, \$5.75.

Psychoanalysis of Today, according to the translator, Ruth E. Roman, is a condensation of a collection of studies published under the direction of Dr. S. Nacht by the "Bibliothèque De L'Institut de Psychoanalyse de Paris."

The first chapter, by S. Nacht and S. Lebovici, deals with the indications and contraindications for psychoanalysis of adults. Quite appropriately, careful weighing of each case is urged with psychoanalysis recommended only if it can definitely be expected to give better results than a simpler form of therapy and if it is felt that the end result will justify so protracted a treatment. It is emphasized that to advise a patient for or against psychoanalysis is a serious

decision because it may shape the future life of the person as well as that of his family. Clinical diagnosis is not the only factor on which a decision must be based. The strength of the instinctual forces and of the ego are important elements to be considered in making the decision.

In a chapter "Clinical Analysis" by M. Bouvet, the contributions of psychoanalysis to clinical practice are comprehensively reviewed. Despite the attempt of the author to be as clinical as possible and to avoid technical psychoanalytic formulations, the psychopathologic and psychodynamic formulations, and especially the description of the structure of the ego and its object relationships in various types of psychiatric disorders, are quite complex. They will not be understood by the average physician.

S. Nacht in a chapter on "Psychoanalytic Therapy" gives an excellent, clear summary of the history, development, principles, and technique of psychoanalysis.

The chapter on "Psychoanalysis of Children" by S. Lebovici, et al., is written in such technical psychoanalytic language (and concept) as to be practically unintelligible to the pediatrician and general practitioner. Nor will it be very meaningful to the child psychiatrist who has not had the benefit of psychoanalytic training. The authors do, however, point out the differences in the nature and manifestations of psychiatric problems in children, as compared to adults.

R. Held in a chapter entitled "Psychoanalysis and Medicine" exemplifies by numerous brief case summaries, the variety of attitudes and relationships that exist between the psychoanalyst and his medical colleagues—varying from the hostile and skeptical to the friendly and accepting. He describes the wide variation in cases that are referred and the problems that arise from the methods of referral, and makes a good point for the importance of the analyst being a physician, and the physician being in part a psychiatrist.

Other chapters deal with, but do not answer, questions concerning the origin of deviations in behavior, the importance of constitutional and environmental factors as observed in infant development and the relationship of psychoanalysis to sociology. P. C. Racamier has written an excellent review of the psychoanalytic therapy of the psychoses.

Like so many books that consist of a collection of individual contributions, there is considerable unevenness in style, clarity and worthwhileness from chapter to chapter. The book will not interest the general practitioner and will appeal to only selected psychiatrists and psychoanalysts.

NORMAN Q. BRILL, M.D.

CIBA FOUNDATION STUDY GROUP NO. 3—CANCER OF THE CERVIX (Diagnosis of Early Forms), in honour of Prof. Dr. C. Kaufmann. Editors for the Ciba Foundation—G. E. W. Wolstenholme, O.B.E., M.A., M.B., M.R.C.P., and Maeve O'Connor, B.A. Little, Brown and Company, Boston, Mass., 1959. 114 pages, with 27 illustrations, \$2.50.

This little book is a collection of seven papers presented at a one-day conference held in London in May 1959 under the auspices of the Ciba Foundation. Various aspects, both morphological and chemical, of the problem of early diagnosis of cervical cancer are presented, and each essay is followed by a verbatim report of the discussion offered by members of the study group. Twenty-three participants are listed, including two from the United States. Since it is impossible to present a coherent summary of such diverse material in a few sentences, it is urged that every pathologist and gynecologist with an active interest in cervical cancer read the book himself. Some of the personal exchanges of viewpoints in the discussion sections are especially fascinating, and in themselves are well worth the very modest investment demanded by the publisher.

C. E. McLENNAN, M.D.

LIFESPAN OF ANIMALS, THE—Ciba Foundation Colloquia on Ageing, Volume 5. Editors for the Ciba Foundation, G. E. W. Wolstenholme, O.B.E., M.A., M.B., M.R.C.P., and Maevae O'Connor, B.A. Little, Brown and Company, Boston, Massachusetts, 1959. 324 pages, with a Cumulative Index of 46 pages—Indexes to Volumes 1-5, \$9.50.

This is the fifth volume of a series of studies begun in 1954. It was prepared from papers delivered at an International Colloquium held in April, 1959. The others are as follows: Volume I, "General Aspects"; Volume II, "Aging in Transient Tissues"; Volume III, "Methodology of the Study of Aging"; Volume IV, "Water and Electrolyte Metabolism in Relation to Age and Sex."

There is appended a cumulative author index and a cumulative subject index.

This is an addition to a very valuable series on basic aspects of the nature of the aging process in the animal kingdom. Such a study is an immense and relatively untouched field that is difficult of research because of its very nature. In order to study it one has to keep animals until they become old. This is a difficult, expensive, painstaking process, which requires more than ordinary patience, not to mention skill. The clinician practicing geriatrics as well as the student of gerontology cannot fail to have a better understanding of this complicated subject and emergent interest by the careful perusal of this collection of reports.

T. ERIC REYNOLDS, M.D.

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MEDICAL CARE OF THE ADOLESCENT—A Textbook Concerning the Medical Care and Understanding of Adolescents Themselves and of their Disorders—J. Roswell Gallagher, M.D., Chief of the Adolescent Unit, The Children's Hospital Medical Center, Boston, and Lecturer on Pediatrics, Harvard Medical School; and the Staff Physicians of the Adolescent Unit. Appleton-Century-Crofts, Inc., 35 West 32nd Street, New York 1, N. Y., 1960. 369 pages, \$10.00.

Pioneers are doubly fortunate. They deserve and receive credit for their vision and initiative in exploring new fields. And they reap richly of the hitherto ungathered harvest in the field. Dr. Gallagher's book on the medical care of adolescence is the fruit of such a harvest.

The field of adolescent medicine is widely covered, ranging, as the author states, through "such matters as a method of conducting their history taking and physical examination to comments on their personality characteristics and emotional needs, and to the management and peculiarities of such of their ailments as epilepsy, acne, epiphysitis, dysmenorrhea, athletic injuries, scholastic failure, diabetes, growth problems, heart disease, and emotional and behavioral difficulties." The actual chapter titles indicate both the breadth and precision of coverage: Comments on the adolescent; the office visit; growth and development during adolescence; the management of cardiac problems and the evaluation of murmurs; congenital heart disease, hypertension, and cardiovascular fitness; diabetes; enuresis; fatigue and fitness; gynecomastia and hyperthelia; obesity; pancreatitis; the thyroid; ulcerative colitis; undescended testis; acne and eczema; the gynecologic examination of adolescents and their normal menstruation; amenorrhea; menorrhagia and metropathia hemorrhagica; premenstrual tension and dysmenorrhea; vaginitis; epilepsy; problems relating to vision; posture and certain common orthopedic disorders; athletic injuries; scholastic failure; specific language disability (dyslexia); the management of emotional problems; sex, homesickness, rebellion, anxiety, and delinquency; mortality, morbidity, and accidents.

It will be noted from the contents that problems related to learning and athletics receive an emphasis which is appropriate to their importance in adolescence. The in-

formation collected in these sections has heretofore been widely scattered and difficult of access.

The content of the chapters reflects partly the experience of the Staff of the Adolescent Unit of Children's Hospital, Boston; partly a review of relevant literature. Sometimes recommendations for treatment seem a little arbitrary, as in considerations of when to treat tall girls or short boys, or in some of the hormonal suggestions for the treatment of dysmenorrhea. But, since the bibliography is so full, with references attached to each chapter and collected in a comprehensive list at the end of the book, anyone can find his way easily to basic work in connection with a specific problem. The subject and author indices also help in such a search.

Actually, this book does a double job of pioneering. Besides marshalling medical knowledge not previously presented in the context of the age range involved, "Medical Care of the Adolescent" pioneers in its consistent integration of psychologic with physical considerations. No condition is described, nor treatment suggested, without giving thought to the psychologic implications of the situation and their meaning for the physician-patient relation.

In the preface, Dr. Gallagher mentions as the second chief purpose of the book: "To emphasize the importance of taking adolescents themselves, their characteristics, their hopes and fears into account, and of treating them, not just their illnesses." The successful achievement of this purpose is so complete and useful to the physician that the influence of a benign and wise psychiatrist is apparent throughout. The psychiatrist, of course, is Dr. H. I. Harris, Dr. Gallagher's long time co-worker and his co-author of another book: "Emotional Problems of Adolescence." Although Dr. Harris is mentioned only in connection with this latter reference, one guesses that he presided over many a medical visit and many a chapter draft.

Altogether the book is a unique, stimulating and reassuring guide to anyone interested in caring for adolescents and their problems.

LEONA M. BAYER, M.D.

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PAIN AND ITCH—NERVOUS MECHANISMS—Ciba Foundation Study Group No. 1—(In honour of Prof. Med. Dr. Y. Zotterman, M.D., R.V.O.). Editors for the Ciba Foundation, G. E. W. Wolstenholme, O.B.E., M.A., M.B., M.R.C.P., and Maevae O'Connor, B.A. Little, Brown and Company, 34 Beacon Street, Boston 6, Massachusetts, 1959. 120 pages, with 41 illustrations, \$2.50.

This little volume contains papers delivered at the first of a series of Ciba Foundation Study Groups. Professor Y. Zotterman of the department of physiology, Kungl. Veterinärhögskolan, Stockholm, was the guest of honor at the meeting. He, and other workers in the fields of neuroanatomy and neurophysiology presented reviews of work dealing specifically with the nervous mechanisms mediating the sensations of itch and pain. Most of the material presented consists of fairly detailed accounts of laboratory experiments on nerves and nerve fiber preparations. The papers are well illustrated with tracings of spike potentials obtained under various experimental circumstances. Peripheral and central nervous mechanisms of pain perception are discussed, primarily on the experimental level. Of more immediate interest to the practitioner is a paper by Arthur and Shelly in which is presented a summary of current information on the Peripheral Mechanism of Itch in Man. The group discussions following each paper are quite stimulating and additional interesting material is given in the general discussion which is the last chapter. This book is intended primarily for those who have a special interest in experimental or clinical neurophysiology.

DONALD H. PAULSON, M.D.

TRIUMPH OF SURGERY, THE—Jurgen Thorwald. Translated by Richard and Clara Winston. Pantheon Books, Inc., 333 Sixth Avenue, New York 14, N. Y., 1960. 454 pages, \$6.50.

This fascinating and vivid account of the main features in the history of surgery during the 19th and early part of the 20th century, makes it enjoyable reading, both to the layman and the physician. The valuable physiological and pathological background is given along with the struggles and frustrations of our pioneers.

Speaking through a figurative Doctor Hartmann, as in his earlier "The Century of the Surgeon," the author continues his familiarity with these characters, thereby making the presentation of authentic material most pleasant.

The narrative consumes some 430 pages which would have been considerably lengthened if all the episodes like localization of brain tumors, and newer discoveries in thoracic and cardiac surgery had been included. These, however, will come under contemporary history and are well known.

The rarely recorded and tragic story of topical, local and spinal anesthesia, the tragedy of the Crown Prince Frederick the III's last illness and the final solution of thyroid and gall bladder surgery illustrate some of the intriguing accounts.

The author has again presented a readable authentic and vivid account of surgery that will fascinate, not only the older physicians, but offers the student and the young physician many stimulating examples.

F. L. REICHERT, M.D.

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VIRUS VIRULENCE AND PATHOGENICITY—Ciba Foundation Study Group No. 4.—G. E. W. Wolstenholme, O.B.E., M.A., M.B., M.R.C.P., and Cecilia M. O'Connor, B.Sc., editors for Ciba Foundation. Little, Brown and Company, Boston, 1960. 114 pages, 13 illustrations, \$2.50.

For many physicians the justification for studying viral infection is illness or death resulting from such infection in man. These phenomena surely represent some aspects of viral virulence and pathogenicity, but in broader terms virulence may be described as "an epiphenomenon of the processes by which the virus survives in nature in relation to the full totality of the environment." A group of distinguished British, Dutch and American investigators met in June 1959 to discuss the complexities of pathogenicity and virulence, with particular reference to influenza viruses. Under the chairmanship of Sir MacFarlane Burnet this group attempted to define what interactions between parasite and host were responsible for manifestations of pathogenicity and to what extent the virulence of the virus, or the susceptibility of the host could be defined quantitatively. The stimulating discussions are reproduced verbatim. While some of the technical points in the debate are of principal interest to medical virologists the general physician will also find much elegant reasoning and many illuminating facts.

ERNEST JAWETZ, M.D.

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CHRISTOPHER'S TEXTBOOK OF SURGERY—Seventh Edition—Edited by Loyal Davis, M.D., Chairman of the Dept. of Surgery, Northwestern University Medical School. W. B. Saunders Company, Philadelphia, 1960. 1551 pages, \$17.00.

This is a seventh edition of a standard Textbook of Surgery, written initially by Christopher and edited now by Loyal Davis. In the reviewer's opinion there are three excellent Textbooks of Surgery at the present time. These are:

Moseley's Textbook of Surgery; Allen, Harkins, Moyer, and Rhoads' Surgery—Principles and Practice, and Christopher's Textbook of Surgery. All of these textbooks have been revised within the past year and all are excellent texts.

The Moseley text has the advantage of being somewhat shorter and having better illustrations than the other two. It is a little easier for a student in the first stages of surgery to acquire the basic principles of surgery. However, it is not nearly so detailed nor as applicable in the long run as Christopher's Textbook of Surgery or the textbook by Allen, Harkins, Moyer and Rhoads on Surgery—Principles and Practice.

Christopher's Textbook of Surgery covers in a very systematic way all of the aspects of general surgery ranging from infections, fluid and electrolyte problems, shock, trauma, to the latest advances in the field of cardiovascular surgery. I think it is an excellent text and one that can be recommended strongly to a student, particularly if he is interested in the long run in going into the field of surgery. It is written in an easily comprehensible style. Despite the fact that there is extensive multiple authorship, the overlap of material presented is not too great.

The only criticism that one can level at the book is its somewhat formidable length. However, the amount of material covered is such that it would be hard to do justice to the material in a shorter volume. This book is recommended strongly to students interested in general surgery.

VICTOR RICHARDS, M.D.

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EXPERIMENTAL SURGERY—Including Surgical Physiology—Fourth Edition—By J. Markowitz, M.B.E., M.B. (Tor.), Ph.D., M.S. in Exp. Surg. (Minn.); Professor of Physiology, University of Toronto; Visiting Professor of Physiology, Ontario Veterinary College, Guelph, Ont.; J. Archibald, D.V.M. M.V.Sc., Dr. Med. Vet. (Giessen), M.R.C.V.S., Professor and Head of the Division of Small Animal Medicine and Surgery, Ontario Veterinary College, Guelph, Ont.; and H. G. Downie, D.V.M., M.S. (Cornell) M.V.Sc., Professor and Head, Department of Physiological Sciences Ontario Veterinary College, Guelph, Ont. The Williams & Wilkins Company, Baltimore 2, Md., 1959. 931 pages, \$12.50.

Experimental Surgery by Markowitz has been truly a classic in the field. This book represents the fourth edition and it has been completely revised and improved. It contains a wealth of information which should be available to every surgical resident and to every surgeon interested in research. It will save one a great deal of time and effort in familiarizing himself with the previous experimental surgery which has been done in an area, if he will avail himself of the contents of this book and also the excellent reference lists which follow each section.

The present book has been brought up to date and includes fairly adequate discussions of such problems as cardiovascular surgery, hypothermia and transplantation of tissues. Perhaps the only area that isn't adequately covered is what might be termed surgical immunology and some of the information related to germ-free animals could be extended in future editions.

The bibliographies at the end of each chapter are not only ample, but contain, in my opinion, the outstanding references to work that has been done in the various fields discussed. This book can be highly recommended to anyone interested in surgical research, to surgical residents who are going to spend some time in research laboratories, and to surgeons in practice who like to dream and think in terms of the experimental approach employing surgery as a tool for enhancing our knowledge of fundamental biology.

VICTOR RICHARDS, M.D.